DEPARTMENT OF THE INTERIOR

Bureau of Land Management

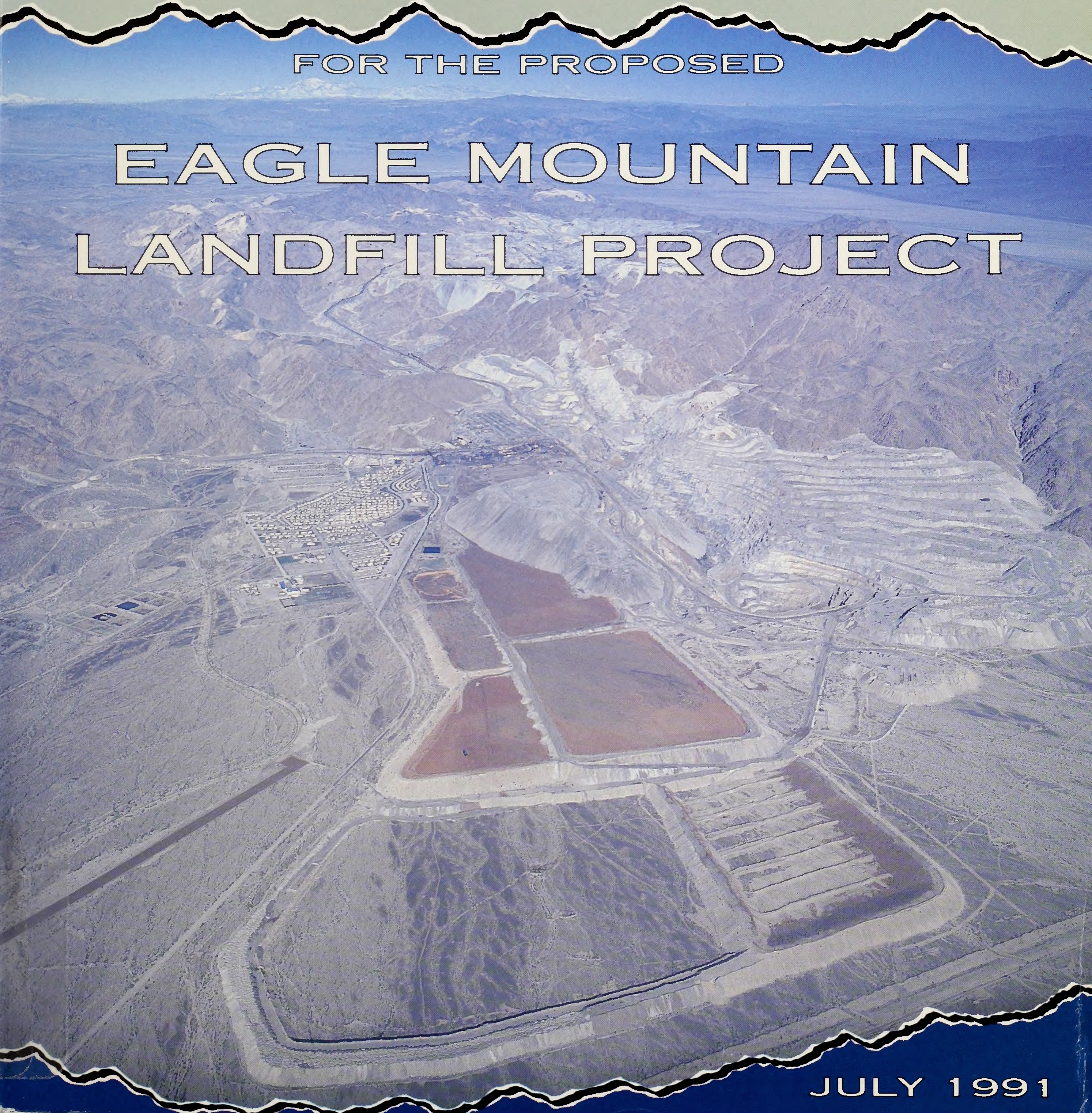
COUNTY OF RIVERSIDE

Planning Department

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
ENVIRONMENTAL IMPACT REPORT

FOR THE PROPOSED

EAGLE MOUNTAIN LANDFILL PROJECT



JULY 1991

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
PALM SPRINGS-SOUTH COAST RESOURCE AREA
400 S. FARRELL DRIVE, SUITE B-205
PALM SPRINGS, CALIFORNIA 92262

IN REPLY REFER TO:

JUN 19 1991

Dear Reviewer:

Enclosed for your review and comment is the Draft Environmental Impact Statement and Report (EIS/EIR) and its appendices and the Riverside County Specific Plan #252 for the Eagle Mountain Landfill Project. The project would be located in the Eagle Mountain Mine area of Riverside County. The purpose of this Draft EIS/EIR is to provide the most current information on the probable environmental and social impacts that would result from the proposed landfill, and the most up-to-date plans for environmental mitigation.

To facilitate review, the Draft EIS/EIR has been prepared to meet Federal requirements of the National Environmental Policy Act, and State requirements of the California Environmental Quality Act. The document has been prepared by Regional Environmental Consultants (RECON) of San Diego, California, under the direction of the Bureau of Land Management and Riverside County.

Comments concerning the adequacy of this document will be considered in preparation of the Final EIS/EIR. A sixty (60) day comment period has been established for this document. Written comments on this document will be accepted through September 17, 1991, and should be addressed to:

Bureau of Land Management
Palm Springs-South Coast R.A.
63-500 Garnet Ave.
P.O. Box 2000
N. Palm Springs, CA 92258-2000

We appreciate your interest in your public lands, and your commitment to participating in this review process.

Sincerely,

Russell L. Kaldenberg
Area Manager

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
ENVIRONMENTAL IMPACT REPORT
FOR THE
EAGLE MOUNTAIN LANDFILL PROJECT
Specific Plan #252
State Clearinghouse No. 8908413

Applicant

KAISER STEEL RESOURCES, INC.
and
MINE RECLAMATION CORPORATION

Prepared for

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Ed Hastey 6/18/91

Ed Hastey
California State Director
Date

COUNTY OF RIVERSIDE
PLANNING DEPARTMENT

Joseph A Richards 6/11/91

Joseph A. Richards
Planning Director
Date

BLM-CA-PT-91-015-2200

Eagle Mountain Landfill Project, Riverside County, California
Federal Land Exchange and Right-of-Way Approval
County General Plan Amendment and Specific Plan
Draft Environmental Impact Statement/Environmental Impact Report

Lead Agencies:

U.S. Department of the Interior
Bureau of Land Management
California Desert District
Palm Springs–South Coast Resource Area

County of Riverside
Riverside, California

Cooperating Agencies:

National Park Service
Joshua Tree National Monument

Bureau of Mines
Western Field Operation Center

Prepared By:

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Abstract:

The Eagle Mountain Landfill Project is a proposed Class III nonhazardous solid waste landfill in an unused open pit mine located at Eagle Mountain in northeastern Riverside County, California. Eagle Mountain is located in the California Desert Conservation Area. The project site is comprised of about 4,695 acres of federal and patented lands. Under the Federal Land Policy and Management Act (FLPMA), about 3,271 acres of Bureau of Land Management (BLM) lands will be transferred to Kaiser Steel Resources, Inc., in exchange for land currently owned by Kaiser Steel Resources, Inc. The BLM lands are necessary for the operation of the landfill and the Kaiser lands contain desirable quality wildlife habitat on the Chuckwalla Bench. Also, a new FLPMA right-of-way would be issued for the entire length of the Eagle Mountain rail line, the existing Eagle Mountain Road, and the proposed Eagle Mountain Road Extension, which begins just south of the Metropolitan Water District (MWD) pumping station.

The landfill itself will comprise 2,272 acres. At full-scale operations, the landfill will accept an inflow of up to 20,000 tons of solid waste per day from throughout southern California

for approximately 115 years. Of this total, 16,000 tons per day will be shipped in containers along the Southern Pacific main line to a rail junction at Ferrum, from which it will be transported along the 52-mile Eagle Mountain rail line to the project site. A total of 4,000 tons per day of containerized waste will be delivered by truck. The project will be served by a network of rail and truck transfer stations to be located throughout southern California.

The Eagle Mountain Landfill Specific Plan amends the Riverside County General Plan and Zoning Ordinance and Map to facilitate initiation of a landfill operation at the Eagle Mountain iron ore mine site. The Specific Plan zone is being created to support the addition of landfill and associated land uses on the project site. The design of the landfill includes the use of a liner on the bottom and side slopes of the pit; a leachate collection, recovery, and treatment system; and a gas collection system. Measures for dust control and a number of other planning and monitoring requirements would also be included in the project. All on-site drainage improvements for protection of run-on into the landfill will be sized to accept 100-year flows. The Specific Plan discusses the relationship of these activities to the project.

The project would contribute particulates and vehicle emissions to the Southeast Desert and South Coast air basins, a cumulative impact which cannot be mitigated. All other potential adverse impacts to the environment either would not be significant or would be mitigated below a significant level through design aspects of the project, implemented either prior to construction of the project or as conditions of county, state, and federal permits applicable to the project.

Other Federal and State Actions:

Endangered Species Act, Section 7 consultation between Bureau of Land Management and U.S. Fish and Wildlife Service
Clean Water Act, Section 404 permit from U.S. Army Corps of Engineers
Solid Waste Facilities Permit from the County of Riverside Department of Health (the Lead Enforcement Agency) and certification by the California Integrated Waste Management Board
California Department of Fish and Game Code, Section 1603 agreement
Discharge Requirements from the Lower Colorado River Regional Water Quality Control Board
Authority to Construct/Permit to Operate from the South Coast Air Quality Management District
Compliance with Section 106 of the National Historic Preservation Act

Issued: July 19, 1991

Last Date for Receipt of Public and Agency Comments: September 17, 1991

Appendixes
(bound separately)

Figures

Figures (cont.)

Figures (cont.)

*Denotes oversized (11" x 17") graphics.

Tables

Tables (cont.)

Executive Summary

I. Purpose of This Document

This draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) addresses the potential impacts and mitigation measures for the Eagle Mountain landfill project. The federal lead agency with responsibility for the project is the Bureau of Land Management (BLM), and the state lead agency is the County of Riverside. This draft EIS/EIR has been prepared pursuant to the requirements of the National Environmental Policy Act (NEPA), which apply to the federal actions, and the California Environmental Quality Act (CEQA) which apply to the state and County actions. In the preparation of this report, the format specifications of NEPA have been followed, with minor modifications to include discussions required by CEQA. Table S-1 illustrates the correspondence between the contents of this report and the discussions required by CEQA.

II. Proposed Action

Mine Reclamation Corporation proposes to develop a Class III nonhazardous solid waste landfill which would accommodate up to 20,000 tons per day (tpd). The landfill site would be located in an unused iron ore open pit mine at Eagle Mountain in northeastern Riverside County, California. The existing mine at Eagle Mountain is located on approximately 4,695 acres, of which 2,280 acres are under public ownership. These public lands will be transferred out of federal ownership to Kaiser Steel Resources, Inc., in exchange for lands owned by Kaiser along the existing Eagle Mountain railroad. The project includes the conversion of the railroad right-of-way granted to Kaiser Steel for mining uses between Ferrum Junction on the northeast coast of the Salton Sea and Eagle Mountain. This rail line is approximately 52 miles long, 32 miles of which exist on a legislatively authorized right-of-way, and would be used to transport waste-filled containers from the Southern Pacific line at Ferrum Junction to the project site. A new rail spur, approximately two miles long, would be built from the Eagle Mountain rail line to a container handling yard located adjacent to the southeast portion of the landfill site.

Waste received by truck would access the site via an extension of the existing Eagle Mountain Road and an existing on-site haul road. A new Federal Land Policy and Management Act (FLPMA) right-of-way would be issued over the entire length of the existing, legislatively authorized Eagle Mountain rail line right-of-way, the existing Eagle Mountain Road, and the Eagle Mountain Road Extension which begins just south of the Metropolitan Water District pumping station. The existing Kaiser Truck Trail legislatively authorized right-of-way would

TABLE S-1
CROSS REFERENCE FOR CEQA CONTENTS

CEQA Guidelines Section	Topic	Location in this EIR/EIS
15122	Table of Contents or Index	Table of Contents and this table, and in Introduction
15123	Summary	Executive Summary and Tables S-1 and S-2 (precedes Introduction)
15124	Project Description	
	a. Location and Boundaries	Section I.B. - Location
	b. Statement of Objectives	Section I.A. - Purpose and Need
	c. Technical Characteristics	Section II.A. - Proposed Action, and throughout topic discussions in Section IV., as necessary
	d. Uses of EIR	Section I.D. - Authorizing Actions
15125	Environmental Setting	Section III. - Environmental Setting, and throughout topic discussions in Section III.
15126	Environmental Impact	
	(a) Significant Effects	Section IV. - Impacts and Mitigation Measures for the Proposed Action and the Alternatives
	(b) Significant Effects Which Cannot Be Avoided	Throughout Section IV., and Summary
	(c) Mitigation Measures	Throughout Section IV., and Summary
	(d) Alternatives	Sections II.B. through II.H.
	(e) Short-Term/Long-Term	Section VI.
	(f) Significant Irreversible Changes	Section VII.
	(g) Growth-Inducing Impacts	Section IV.H., Growth Inducement and Socioeconomics
15128	Effects Not Significant	Noted in each topic in Section IV.

TABLE S-1
CROSS REFERENCE FOR CEQA CONTENTS
(continued)

CEQA Guidelines Section	Topic	Location in this EIR/EIS
15129	Organizations and Persons Consulted	Section VIII., List of Preparers
15130	Cumulative Impacts	Section V.
15131	Economic and Social Effects	Sections IV.H. and V.

be abandoned. Additionally, the Eagle Mountain Landfill Specific Plan would amend the Riverside County General Plan and the Zoning Ordinance and Map to facilitate initiation of a landfill operation at the Eagle Mountain Mine site.

Several off-site solid waste processing and transfer stations (materials recovery facilities, or MRFs) will be necessary to serve the landfill; however, they are not part of the proposed action and are not discussed in detail in this draft EIS/EIR.

All federal, state, and county standards regarding design, construction, and operation of the landfill would be incorporated into the project. These include requirements for lining the bottom and sides of the East Pit and other ground surfaces before placing refuse and installation of systems for collection, recovery, monitoring, and treatment of landfill gas and leachate that may be produced during the life of the project. Mitigation measures for dust control and many other planning and monitoring requirements would be included in the project. Closure procedures and post-closure monitoring and funding would be provided by the project.

The project would also provide for the transport and temporary storage of recyclable materials collected at MRFs.

III. Actions Covered

Actions identified and covered by this EIS/EIR include:

1. Bureau of Land Management land exchange and right-of-way grant pursuant to the FLPMA.

2. County of Riverside General Plan Amendment, Zone Change, and Specific Plan adoption for purposes of establishing the landfill and associated uses. The Mine Reclamation Plan approved in 1978 must be revised and a Development Agreement approved.

3. Subsequent permits and actions necessary to implement the landfill and rehabilitation of the existing railroad and truck road, including a solid waste facilities permit to be issued by the Riverside County Department of Health (the Lead Enforcement Agency) and the California Integrated Waste Management Board, waste discharge requirements to be issued by the Colorado River Regional Water Quality Control Board, and Authority to Construct and Permit to Operate for the landfill gas disposal system to be granted by the South Coast Air Quality Management District.

4. Consultation with the U.S. Fish and Wildlife Service required by Section 7 of the Endangered Species Act, because the proposed land exchange and resumption of intensive use of railroad operation could affect populations of federally listed endangered species (desert tortoise and desert pupfish).

5. An agreement (pursuant to Section 1603 of the California Fish and Game Code) with the California Department of Fish and Game for the alteration of any streambed. Likewise, a Memorandum of Understanding under the California Endangered Species Act, California Fish and Game Code Section 2081.

6. Compliance with Section 106 of the National Historic Preservation Act.

7. A possible Section 404 permit from the U.S. Army Corps of Engineers.

IV. Actions Not Covered

Several related discretionary actions are identified but not covered by this draft EIS/EIR. They include:

1. County of Riverside General Plan Amendment, Zone Change, and Specific Plan adoption for purposes of establishing the townsite of Eagle Mountain and its associated activities would be required.

2. Operation of the project would depend on the transfer of waste from a system of MRFs or processing and transfer stations located throughout the areas served by the landfill. Some of these exist and others would be developed in the future. Each of these stations requires its own local land use permit (a conditional use permit in most cases) and its own solid waste facilities permit. These actions associated with the off-site transfer stations are not covered by this draft EIS/EIR.

3. Limited mining activities may continue during proposed landfilling operations. These mining activities have not been assessed in this draft EIS/EIR and may require additional NEPA/CEQA environmental review and agency approval.

V. Alternatives Considered in Detail

In addition to the proposed action, the following project alternatives are considered in detail within this draft EIS/EIR. Within each environmental topic discussed, their impacts are compared with that of the proposed project.

A. Reduced Landfill Operations Alternative

This alternative would allow for the disposal of up to 16,000 tpd in a reduced landfill area. The reduced landfill area would be the same as the proposed project's area less those areas containing the deepest portions of the East Pit. It would allow for the disposal of 14,000 tpd by rail and 2,000 tpd by truck. Truck traffic is included in this alternative to enable the project to serve potential future demand in Riverside County which cannot be economically served by rail transportation.

This alternative would have the effect of reducing the capacity of the landfill by approximately 20 percent compared to the proposed project. However, at an inflow of 16,000 tpd, the potential 115-year site life of the project would not be reduced.

B. Proposed Action with Rail Access Only Alternative

This alternative would limit the project to 16,000 tpd of solid waste, delivered by rail only. It would avoid the effects attributable to the 200 truck deliveries per day, but it would also remove some of the operational flexibility of the project. Communities without rail service either could not use the proposed landfill or would have the extra cost of providing truck transport to a transfer station with rail access.

C. No Project Alternative

This alternative would leave the project area in its present disturbed condition and avoid the potential effects of the proposed landfill. It would require continued reliance on existing or new landfills in southern California.

VI. Impacts That Cannot Be Mitigated

The air quality effects of the project are considered a significant impact. The increases in air emissions in the South Coast Air Basin resulting from the long- distance transport of solid waste and the incremental increase of emissions in the Southeast Desert Air Basin cannot be entirely avoided.

VII. Summary of Project Impacts, Mitigation, and Monitoring

Table S-2 summarizes the environmental effects of the proposed project and alternatives. Each environmental issue listed in the Table S-2 is separated into sub-issues and evaluated by sub-issue. The summary table describes potential impacts resulting from the proposed project and alternatives, recommended mitigation measures, and resulting level of significance after implementation of recommended mitigation measures.

VIII. Summary of Cumulative Impacts

Impacts occurring as a result of cumulative projects in the vicinity of the proposed Eagle Mountain landfill operation depend on future uses of the area, such as the possible resumption of mining activity. Regionally, continued residential development in and around Blythe and continued development of utilities are anticipated. Increased air emissions in both the South Coast Air Basin and the Southeast Desert Air Basin would be the most significant cumulative effect resulting from the proposed project and projects of a regional nature.

Implementation of the landfill project is not anticipated to contribute to any cumulative impacts other than those associated with degradation of air quality, desert tortoise population fragmentation, habitat loss for Alverson's foxtail cactus and California barrel cactus, increased regional water consumption, and visual character of adjacent wilderness areas. However, the only cumulative impact considered significant after mitigation is to air quality, because the project is located in a nonattainment air basin. A summary of these impacts may be found at the end of Table S-2.

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
WATER QUALITY				
Groundwater Quality				
Impacts	Potential degradation of groundwater due to migration of leachate	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Install liner; install leachate collection system; control landfill gas (LFG) by LFG recovery; install detection monitoring wells	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Surface Water Quality				
Impacts	Potential pollution of surface waters due to contact with refuse	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Install drainage collection system	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Groundwater Use and Supply				
Impacts	Will increase overdraft of aquifer; however, based on aquifer reserves, not considered a significant impact	Reduces the capacity of the project by 20 percent with a 10 percent reduction in water use	Same as proposed action	No impact

TABLE S-2

SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION

(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	None required	None required	None required	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
PUBLIC HEALTH AND SAFETY				
<u>Hazardous Wastes</u>				
Impacts	Potential for exposure to hazardous wastes at transfer stations, material recovery facilities and working face of landfill	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Inspect and screen refuse for hazardous wastes at transfer or materials recovery stations, or at an on-site inspection station; remove hazardous waste for disposal at appropriate hazardous waste sites	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Landfill Gas</u>				
Impacts	Potential hazards due to accumulation of landfill gas (LFG)	Same as proposed action	Same as proposed action	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Install LFG recovery/ utilization and migration control system, permanent subsurface LFG monitoring wells near structures, and combustible gas sensors in building interiors	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Fires				
Impacts	Potential for subsurface landfill fires, surface fires, refuse fires, and fires along right-of-way	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Properly operate and maintain the landfill gas collector system; incorporate staged response for control of subsurface fires into the emergency response plan; retain large watering trucks and earth-moving equipment for on-site emergency response capabilities; regularly inspect and remove vegetation which may pose a fire hazard on right-of-way	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Vectors and Disease				
Impacts	Potential for landfill to be used by animals, birds, and insects for foraging and/or breeding may result in an increased potential for disease	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Place earthen material over the refuse on a daily basis	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Worker Safety				
Impacts	Potential exposure to noise, dust, odors, landfill gas, and unsafe materials	Same as proposed action	Same as proposed action	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Develop a standard set of procedures for employee handling of refuse, including use of personal protective equipment, use of enclosed cabs on heavy equipment, rotation of worker assignments, and adequate supervision of personnel; exposure to LFG will be controlled by the collection and disposal system for LFG	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Public Safety				
Impacts	Public exposure to nonhazardous waste resulting from truck and rail accidents	Slightly less than proposed action	Eliminate potential for truck accidents	No impact
Mitigation Measures	Establish an emergency response plan with adequate staff either on-site or on-call for any clean-up efforts required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
TRAFFIC AND TRANSPORTATION				
Rail Operations				
Impacts	No significant impacts were identified for the proposed action	Slightly less than proposed action (10 daily one-way trains instead of 12)	Same as proposed action	No impact
Mitigation	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
At-Grade Crossings				
Impacts	Surface street vehicular traffic will incur slight delays at at-grade rail crossings; at-grade crossing hazards will be increased slightly	Rail operations will be reduced (10 daily one-way trains instead of 12)	Same as proposed action	No impact
Mitigation Measures	Conduct rail service at night to minimize conflicts with vehicular traffic; install flashing lights to notify drivers and pedestrians of approaching trains at rail crossing at Kaiser Road	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Truck Traffic on Streets				
Impacts	Approximately 200 one-way truck shipments would occur per day; Eagle Mountain Road Extension would create a roadway crossing at Kaiser Road, which serves the community of Eagle Mountain, including local school	Truck traffic is reduced by half	There will be no impacts due to truck traffic	No impact
Mitigation Measures	Install stop signs at roadway crossing of Eagle Mountain Road Extension and Kaiser Road	Same as proposed action	None required	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
AIR QUALITY				
Emissions				
Impacts	Degradation of air quality due to increased emissions in both the South Coast Air Basin and the Southeast Desert Air Basin due to increased emissions from motor vehicles, including train locomotives, on-highway haul trucks, and off-highway heavy equipment	Less truck and rail traffic will result in decreased emissions	Use of rail only will result in decrease in emissions	Continued degradion of air quality in South Coast Air Basin from use of existing or new landfills

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Shut down diesel locomotives when engines are not needed for one hour or more; use diesel fuel and engines certified by the California Air Resources Board; install energy recovery or pollution equipment when warranted for LFG equipment; monitor meteo-rological conditions for at least 12 months and update air quality modeling and mitigation strategies; incorporate other control measures as required by ARB/APCD	Same as proposed action	Same as proposed action	None available
Significance after Mitigation	Impacts will not be reduced below a level of significance	Impacts will be less than the proposed project but not reduced below a level of of significance	Impacts will be less than proposed project but not reduced below a level of significance	Continued significant impacts in South Coast Air Basin and Southeast Desert Air Basin
<u>Ambient Concentrations</u> Impacts	Pollutant concentrations at typical rail crossings are not significant; exceeds state standards for NOx and state and federal standards for PM10 at the landfill site; exceeds increments at Joshua Tree National Monument boundary for NO, SOx, and PM10	Slightly reduced emmissions from proposed action	Similar to reduced operations alternative	No impact to SEDAB

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Same measures as for emissions from proposed action identified above	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Impacts will not be reduced below a level of significance	Impacts will be less than proposed project but not reduced below a level of significance	Impacts will be less than proposed project but not reduced below a level of significance	No impact to SEDAB
<u>Health Risk Assessment</u>				
Impacts	Potential for increased health risk to area residents due to exposure to LFG	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Interception and removal of hazardous wastes within waste stream; reanalysis of impacts using actual weather data to identify additional mitigation measures, if necessary, as part of the Report of Disposal Site Information	Same as proposed action	Same as proposed action	No impact
Significance after Mitigation	Impacts will not be reduced below a level of significance	Impacts will be less than proposed project but not reduced below a level of significance	Impacts will be less than proposed project but not reduced below a level of significance	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Consistency with Regulatory Programs				
Impacts	Statutory requirements ensure consistency with regulatory programs	Same as proposed action	Same as proposed action	None required
Mitigation Measures	Application, permit review, imposition of control conditions, approval, and inspection processes of the SCAQMD will serve to enforce consistency	Same as proposed action	Same as proposed action	None required
Signifcance after Mitigation	Not significant	Not significant	Not significant	None required
LAND USE				
Existing Uses				
Impacts	Minimal interference with iron ore reserves, but not considered a significant impact	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Surrounding Uses				
Impacts	Potential impacts to existing residential use and correctional facility	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Restrict truck traffic to designated roads; maintain minimum 25-foot setback and maximum 60-foot height for all project buildings; maintain berms to partially obscure views onto project site; control fugitive dust; install sound attenuating walls as needed	Same as proposed action	Not significant	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Consistency with Plans and Policies				
Impacts	The project would require a BLM land exchange and County General Plan amendment and zone change to make the project consistent with existing plans	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
DRAINAGE				
Impacts	Potential drainage impacts to the East Pit, townsite, and alluvial areas east of the project site	Same as proposed action	Same as proposed action	Continued inadequate drainage at the East Pit, townsite, and alluvial areas east of the project site
Mitigation Measures	Install perimeter drainage system; slope final landfill not greater than 3 percent	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
BIOLOGY				
Desert Tortoise				
Impacts	Permanent loss of individuals and habitat, potential increased raven predation, potential harassment of individuals (noise and vibration)	Same as proposed action	Avoids permanent loss of habitat (widening of Eagle Mountain Road), and impacts from truck traffic; other potential impacts similar to proposed action	No impact
Mitigation Measures	Survey and monitor prior to and during construction/maintenance, relocate individuals from railroad bed; install culvert system and protective fence; preserve off-site habitat; raven control and monitoring; worker education	Same as proposed action	Same as proposed action but delete off-site preservation	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Bighorn Sheep				
Impacts	Loss of 4 water sources and habitat; potential indirect effects from measured residential population; potential disruption of sheep movement	Impacts would be slightly reduced	Same as proposed action	No impact
Mitigation Measures	Install three permanent water sources far from mine site to encourage bighorn sheep to use surrounding natural areas; these sites and their design to be approved by biologists at BLM and CDFG; rehabilitate Buzzard Springs and clear of tamarisk; if sheep are not naturally expanding their ranges to incorporate new sources, translocate them; preserve buffer habitat areas around landfill (644 acres); monitor sheep movement; conduct employee awareness program	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Desert Pupfish				
Impacts	Potential impacts from rail accident or major construction on trestle over habitat	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Annually monitor pupfish (by CDFG); if major construction is necessary, incorporate protective measures in plans and monitor construction/maintenance activities; include biologist on emergency response team and restore any habitat disturbed by accident	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Other Sensitive Wildlife				
Impacts	Potential loss of California leaf-nosed bat roosting areas hibernacula; increased raven predation on Eagle Mountain scrub jay	Slight reduction on overall habitat loss	Same as proposed action	No impact
Mitigation Measures	Monitor bat roost sites; maintain adit opening; monitor and control ravens	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Sensitive Plant Species				
Impacts	Loss of 158 acres of foxtail cactus habitat	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Preserve 157 acres of foxtail cactus on-site; initiate transplant program for lost cacti on suitable areas within project boundary; monitor transplants once a month for one growing season; submit monitoring report to BLM, CDFG, and USFWS	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Major Washes and Drainages				
Impacts	No significant impacts to wetlands are anticipated to occur from this project	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
GROWTH INDUCEMENT AND SOCIOECONOMICS				
Growth Inducement				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impacts
Mitigation Measures	None required	Same as proposed action	Not significant	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Socioeconomics				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impacts
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
GEOLOGY				
Soils and Geology				
Impacts	Potential exists for settlement within alluvial soils, for expansive soils, and for surficial instability	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Identify expansive soils in alluvial material within the landfill footprint and regrade, as necessary; determine the safe slope angles and maintain slopes	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
	within this range; identify need to flatten slopes or construct fill buttresses; excavate and/or recompact unsuitable soils prior to liner construction; place liner against safe slope angles			
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Seismicity</u>				
Impacts	Potential ground shaking	Same as proposed action	Same as proposed action	No impacts
Mitigation Measures	Progressively scale loose rock and materials on benches immediately above the working face of the landfill, and construct berms to intercept fallen rock	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Mineral Resources</u>				
Impacts	Potential loss of recoverable iron ore reserves	Approximate 50 percent reduction of proposed project's impacts	Same as proposed action	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Sequence landfill operations so as to impact mineral resources last to allow for recovery prior to impact	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
VISUAL, RECREATION, AND WILDERNESS				
<u>Visual Contrast</u>				
Impacts	Potential for increased visual contrast	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Blend the topographic contours of the landfill with adjacent landforms, and minimize color and tone contrast of the final cover; revegetation of the landfill will further reduce visual contrast impacts	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Same as proposed action	Same as proposed action	None required
<u>Views from Desert Center and Other Key Observation Points</u>				
Impacts	No significant impact	Same as proposed action	Same as proposed action	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Same as proposed action	Same as proposed action	None required
Views from Eagle Mountain Townsite				
Impacts	The proposed action will have a significant impact on the views from the community of Eagle Mountain; however, that impact will not be visible for several decades; visual contrast will be decreased over time	The reduction in size and scale of the landfill would serve to reduce visual impact as compared to the proposed action	Incremental improvement over proposed action	Currently, the views from the community are significantly impacted by the imposing tailing pile, the exposed slopes, and scarred areas; this high level of impact would remain
Mitigation Measures	Phase project, revegetate disturbed areas, and revitalize community	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	A significant impact is associated with this alternative
Windblown Debris and Dust				
Impacts	Potential for windblown debris and dust	Same as proposed action	Same as proposed action	No impact

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Mitigation Measures	Transport all refuse materials to the site and to the face of the landfill in closed containers, compacted and covered on a daily basis; water haul roads regularly; install fencing and regularly patrol for litter retrieval; develop an active storm and early warning procedure for extremely windy conditions and response plan to ensure timely and complete cleanup of accidental spills	Same as proposed action	Incremental improvement over proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Night Lighting				
Impacts	Potential for visually impacting the surrounding area by night lighting	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Limit landfill activities other than the container handling operation, to daylight hours; provide low-pressure sodium safety and	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
	security lights; direct lighting downward to light only the immediate area			
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Recreation				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Wilderness				
Impacts	Indirect impacts associated with increased activity visible from WSAs	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Location and design of landfill and reduction of visual contrast	Same as proposed action	Same as proposed action	Continued low level of impact to WSAs
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
UTILITIES AND SERVICES				
Water and Sewer				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Not significant	None required
Fire and Police				
Impacts	No significant impacts were identified for police protection; significant fire protection impacts were identified due to inadequate and poor hydrant placement and pressure	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required for police protection; obtain written agreement for fire protection services from the Riverside County Fire Department; submit a Fire/Life Safety and Emergency Response Plan to the Fire Department; install water mains and fire hydrants to provide the required fire flows; participate in the fire protection impact mitiga-	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
	tion program as adopted by the Riverside County Board of Supervisors			
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Utilities</u>				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Community Facilities</u>				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
NOISE				
<u>Short-term Construction Noise</u>				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2

SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION

(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
<u>Rail Operations</u>				
Impacts	Potential impacts to non-human receptors are not considered significant; potential noise impacts to future land uses	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Install sound attenuating walls as needed	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
<u>Truck Traffic</u>				
Impacts	Increases are not significant; only residences close to I-10 may experience CNELs above 65 dBA	Same as proposed action	There would be no noise impacts from truck traffic	No impact
Mitigation Measures	Require truck traffic to use the Eagle Mountain Road interchange and access to the project site	Same as proposed action	None required	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
On-site Landfill Operations				
Impacts	The potential exists for residences located within 500 feet of the project site to experience occasional significant noise levels during operations to remove cover material from the large tailing pile	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	Maintain the body of the tailing pile to serve as a noise barrier for as long as possible and specific restrictions on operations in this area	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
CULTURAL RESOURCES				
Cultural Resources of Riv-3798 and Riv-3216				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
Native American Concerns				
Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
PALEONTOLOGY				
Impacts	Excavations within portions of Eagle Mountain Mine improvements to Eagle Mountain Road at the I-10 exit have the potential to impact paleontologic resources; rehabilitation and maintenance of the rail line will not impact paleo resources	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	A program to mitigate impacts to paleontologic resources will include a preexcavation survey, excavation monitoring, fossil preparation and identification, and preparation of a report by a qualified paleontologist; this report shall be submitted to Riverside County, BLM, and	Same as proposed action	Same as proposed action	None required

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
	San Bernardino County Museum; rehabilitation and maintenance of the rail line will not require mitigation			
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
ENERGY				
Impacts	Project implementation will require approximately 17,000 more gallons of diesel fuel per day than landfills located closer to the wasteshed until LFG recovery/utilization occurs in 12 to 27 years	Will require approx. 11,289 more gallons of diesel fuel per day than landfills located closer to the wasteshed until LFG recovery/utilization in 12 to 27 years	Will require approximately 13,000 more gallons of diesel fuel per day than landfills located closer to the wasteshed until LFG recovery/utilization in 12 to 27 years	Southland currently uses 17,000 gallons of diesel fuel per day in landfills located closer to the wasteshed
Mitigation Measures	A preventative maintenance program would be implemented for the rail line and at the landfill site to maintain the operating efficiency of equipment and vehicles	Same as proposed action	Same as proposed action	None available
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Project
CUMULATIVE				
Water Quality/Use; Health and Safety; Traffic; Land Use; Growth and Socioeconomics; Visual, Recreation, and Wilderness; Utilities and Services; Noise; Cultural; Energy				
Cumulative Impacts	No significant impacts	Same as proposed action	Same as proposed action	No impact
Mitigation Measures	None required	Same as proposed action	Same as proposed action	None required
Significance after Mitigation	Not significant	Not significant	Not significant	Not significant
Air Quality				
Cumulative Impacts	Significant cumulative impacts	Incremental improvement over proposed action	Same as proposed action	Significant cumulative impacts
Mitigation Measures	Implementation of South Coast Air Quality Management Plan	Same as proposed action	Same as proposed action	Same as proposed action for other projects
Significance after Mitigation	Significant until year 2007	Same as proposed action	Same as proposed action	Same as proposed action

TABLE S-2
SUMMARY OF PROJECT AND ALTERNATIVES' IMPACTS, MITIGATION AND IMPLEMENTATION
(continued)

Issues	Proposed Action	Reduced Landfill Operations	Rail Access Only	No Action
Biological Resources				
Cumulative Impacts	Potential desert tortoise population fragmentation due to reactivation of Kaiser railroad; potential loss of substantial populations of Alverson's foxtail cactus and California barrel cactus due to project implementation	Same as proposed action	Same as proposed action	Potential of similar impacts in other project areas
Mitigation Measures	Preoperation surveys, monitoring raven control plan, rail and road barriers and culverts, employee education, off-site habitat preservation for desert tortoise; habitat preservation and salvage for public use of cactus species	Same as proposed action	Same as proposed action	Similar to proposed action
Significance after Mitigation	Not significant	Same as proposed action	Same as proposed action	Not significant

I. Introduction

A. Proposed Action

Mine Reclamation Corporation (MRC) proposes to develop a Class III nonhazardous solid waste landfill which would accommodate up to 20,000 tons of refuse per day. The landfill site would be located in an unused iron ore open pit mine (East Pit area) at Eagle Mountain in northeastern Riverside County, California, approximately 10 miles north of Interstate 10 (I-10) and the community of Desert Center (Figures 1 and 2). This region is bordered on the north by the Pinto Basin, on the east by the Chuckwalla Valley, on the south by the Chuckwalla Mountains, and on the west by the main body of the Eagle Mountains. The northern boundary of the project site is approximately 8,000 feet south of Joshua Tree National Monument. A ridgeline of the Eagle Mountains separates the project area from the Pinto Basin, which is within the monument and wilderness areas.

The East Pit area of the existing mine at Eagle Mountain is located on approximately 4,695 acres, some of which are under public ownership. The public lands, as well as some adjacent lands, will be transferred out of federal ownership to Kaiser Steel Resources, Inc., in exchange for lands owned by Kaiser. The project also includes the conversion of the right-of-way for the existing Eagle Mountain rail line granted to Kaiser Steel for mining uses between Ferrum Junction on the northeast coast of the Salton Sea and Eagle Mountain. This rail line is approximately 52 miles long, 32 miles of which exists on a legislatively authorized right-of-way, and would be used to transport waste-filled containers from the Southern Pacific line at Ferrum Junction to the project site. A new rail spur, approximately two miles long, would be built from the Eagle Mountain rail line to a container handling yard which would be located adjacent to the southeast portion of the landfill site.

Waste received by truck would access the site via a proposed extension of the existing Eagle Mountain Road and an existing on-site haul road. A new Federal Land Policy and Management Act (FLPMA) right-of-way would be issued over the entire length of the existing, legislatively authorized Eagle Mountain rail line, the existing Eagle Mountain Road, and the Eagle Mountain Road Extension which begins just south of the Metropolitan Water District (MWD) pumping station. Additionally, the Eagle Mountain Landfill Specific Plan would amend the Riverside County General Plan and the Zoning Ordinance and Map to facilitate initiation of a landfill operation at the Eagle Mountain Mine site. The above actions are described in detail with appropriate location maps in the proposed action in the Alternative section of this draft environmental impact statement/environmental impact report (EIS/EIR).

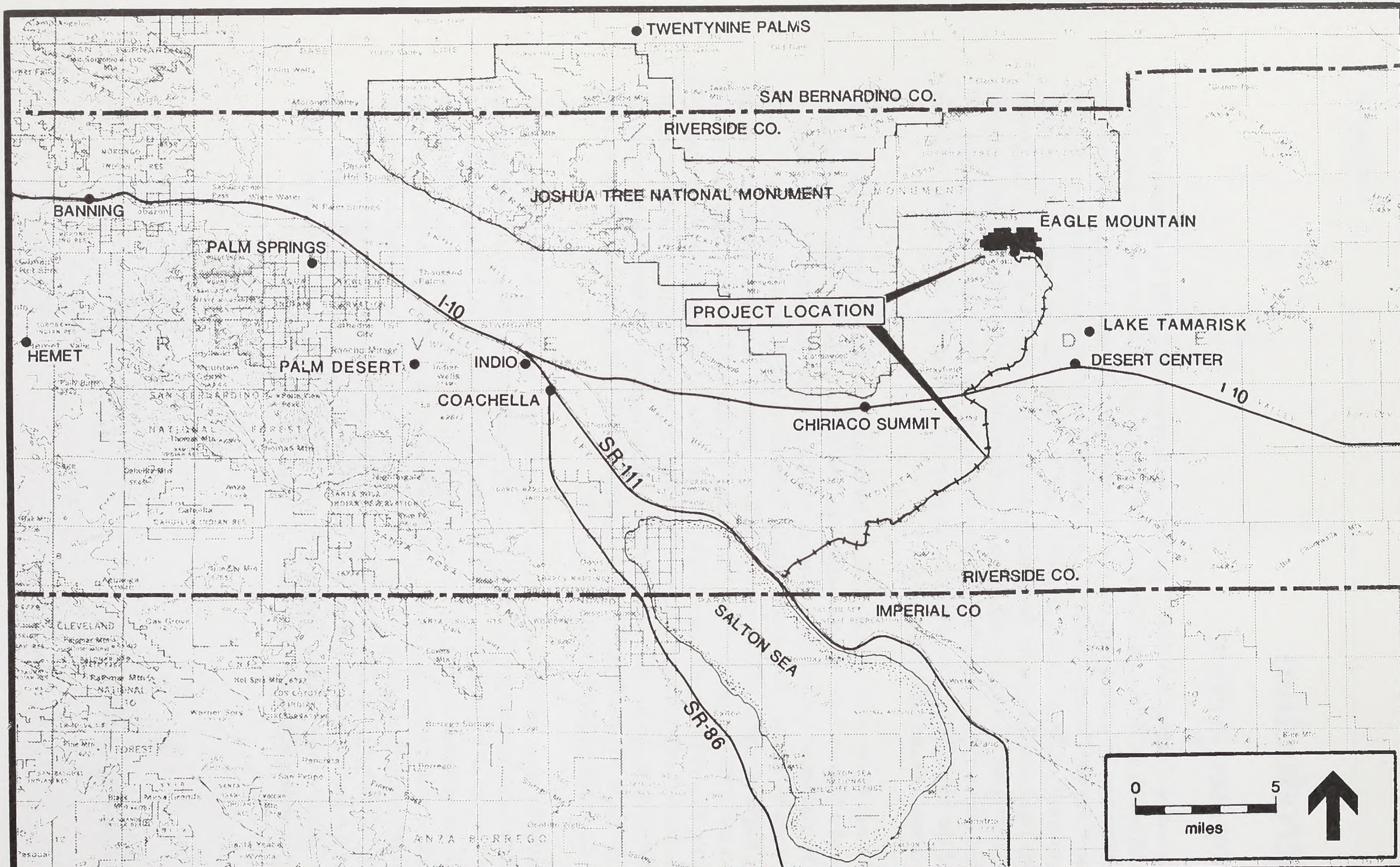

FIGURE 1. PROJECT LOCATION RELATIVE TO EASTERN RIVERSIDE COUNTY

RECON

R-2100E 2/91

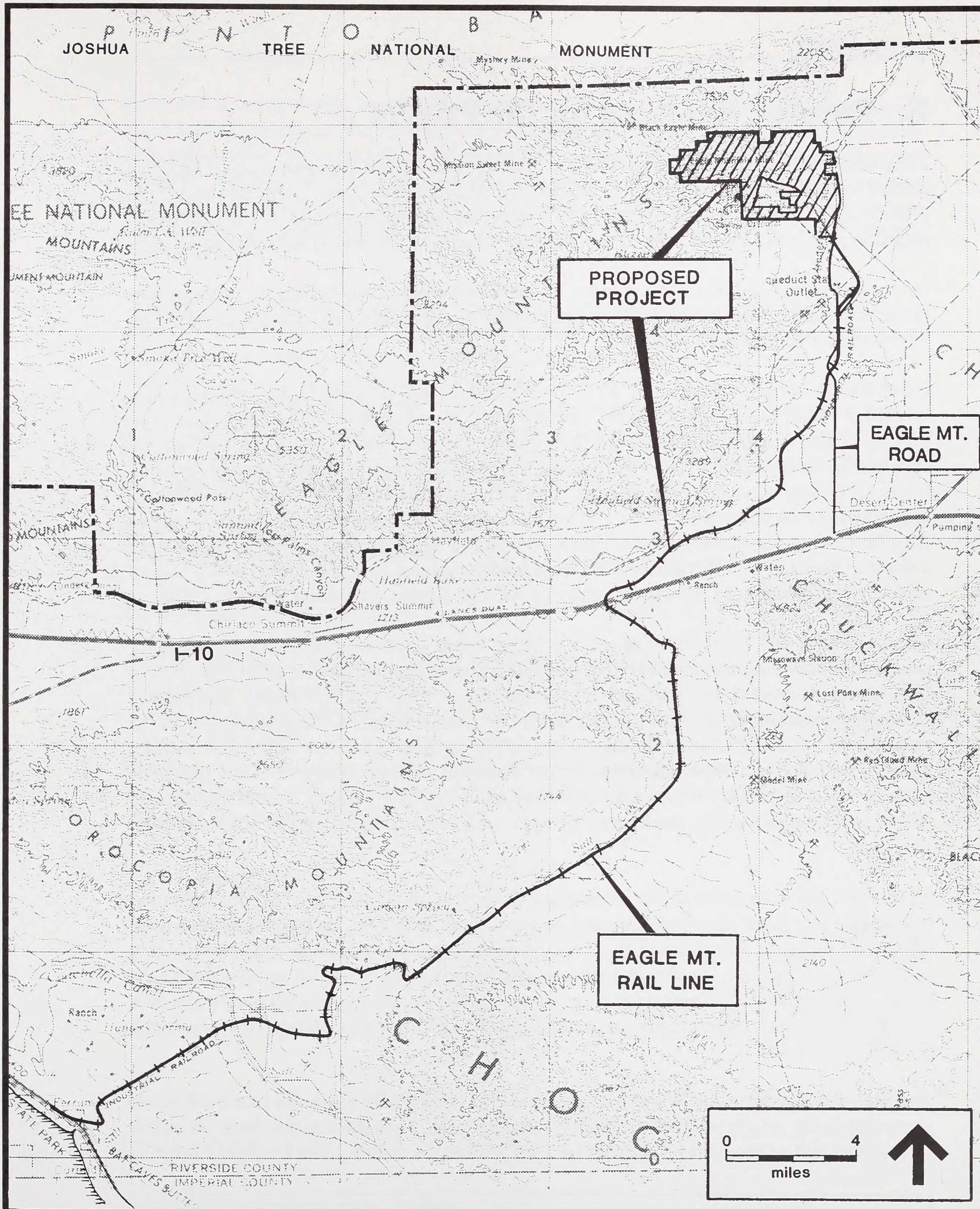

FIGURE 2. PROJECT LOCATION ON U.S.G.S. 1:250,000 SCALE MAP, SALTON SEA SHEET

RECON

R-2100E 2/91

B. Purpose and Need for the Project

The purpose and need for this project are (1) to develop new Class III waste disposal facilities needed to accommodate estimated future demand throughout southern California and (2) to provide capacity in a remote desert setting which avoids land use compatibility and landfill gas emission problems faced by existing landfills in proximity to residential and other urban uses.

In terms of supply and demand, a number of publications have documented the need for new refuse disposal facilities in Los Angeles, San Bernardino, Riverside, and Orange counties. This information is summarized as follows.

Currently, a total of approximately 45,000 tons per day (tpd) of nonhazardous solid waste is generated within Los Angeles County. Of this total, approximately 18,000 tpd comes from the city of Los Angeles and 8,000 tpd from the San Gabriel Valley. If no new landfills are developed, existing facilities are not expanded, and recycling remains at approximately existing levels, a county-wide disposal capacity shortfall will first occur in 1991, increasing to approximately 40,000 tpd in 1995 (City of Los Angeles, County of Los Angeles, and Los Angeles County Sanitation Districts 1988). The city of Los Angeles is already experiencing a disposal shortfall of 5,000 tpd, which is expected to increase to 20,000 tpd in 1997 (City of Los Angeles, County of Los Angeles, and Los Angeles County Sanitation Districts 1988).

State Assembly Bill (AB) 939, a recently enacted statute requiring mandatory recycling for residential solid waste, is expected to reduce the severity of the disposal capacity shortfall in Los Angeles County as this program is implemented over the next few years. Historically, successful curbside residential recycling programs have resulted in the diversion of 12-15 percent of the residential waste stream from landfills. If these results are achieved in the city of Los Angeles, for example, curbside collection may result in the diversion of 900 tpd. This savings would reduce the total waste landfilled in the city by 5 percent. Additional savings will be achieved as the City implements planned yard waste composting and other diversion programs.

As of 1987, the valley area of San Bernardino County (with 80 percent of the county's total population) was generating and disposing of approximately 3,900 tpd of nonhazardous solid waste in five County-owned landfills. If per capita waste generation increases at the same rate as elsewhere in southern California, existing capacity may be exhausted in approximately six years. The County is evaluating the potential to expand an existing landfill and to site new facilities to meet its long-term disposal needs (Southern California Association of Governments [SCAG] 1988:1-16).

The Riverside County Solid Waste Management Plan (CoSWMP) estimates total solid waste generation in the county in 1990 at 1,560,000 tons per year. On a six-day-per-week basis, this means that slightly more than 5,000 tpd are landfilled in the county. The CoSWMP projects

that waste generation will almost double between 1987 and the year 2005. This projection is based almost entirely on projected growth and a constant rate of per capita waste generation. Although projects other than Eagle Mountain could conceivably meet future demand within Riverside County, the Board of Supervisors has reserved up to 2,000 tpd in its existing agreement with the project applicant. The El Sobrante, Lamb Canyon, and Eagle Mountain landfill sites are tentatively identified as future regional disposal sites in the CoSWMP (1989a:XI-40).

Of all the southern California counties, Orange County has the most permitted disposal capacity relative to anticipated demand. At the current waste disposal rates of approximately 12,900 to 16,100 tpd, the permitted capacity of existing landfills will last for approximately 11 years. The recent approval of a new major landfill at Bee Canyon will increase the site life of existing facilities to approximately 18 years. The County is currently attempting to site a new facility in the northern portion of the county to replace the existing Olinda Landfill. Without this new facility, however, a capacity shortage within northern Orange County may occur in 1994 when the remaining capacity at the Olinda Landfill is fully utilized.

C. Decisions Needed

1. Federal

The State Director of the Bureau of Land Management (BLM) must approve a real estate action involving the transfer of BLM lands to Kaiser Steel Resources, Inc., in the Eagle Mountains in return for Kaiser lands along the Eagle Mountain rail line. Also, the director must approve a new FLPMA right-of-way over the entire length of the Eagle Mountain rail line, Eagle Mountain Road, and the proposed Eagle Mountain Road Extension. These actions are described in detail with appropriate location maps in the proposed action in the Alternatives section of this draft EIS/EIR.

2. County

The Riverside County Board of Supervisors must approve a General Plan Amendment, zone change application, and provision of a Specific Plan to establish a Class III nonhazardous solid waste landfill in the Eagle Mountains. The Mine Reclamation Plan approved in 1978 must be revised and a Development Agreement approved. The Specific Plan that includes the landfill site is described in detail in the proposed action in the Alternatives section of this draft EIS/EIR.

D. Consultation and Coordination

1. Scoping

The process to identify the scope and contents of this draft EIS/EIR was formally initiated on August 15, 1989, by the publication of the Notice of Preparation (NOP) required by the California Environmental Quality Act (CEQA) for the EIR to be prepared by the County of Riverside. The NOP was sent to 175 agencies, cities, governmental officials, and other groups. Copies were also sent to the California Office of Planning and Research (OPR), the state clearinghouse for distribution to state agencies. OPR sent the NOP to 10 different state regulatory or resource agencies. Appendix A contains the NOP and list of recipients.

The County of Riverside conducted public scoping meetings at the following locations:

Desert Center – August 30, 1989
Indio – August 31, 1989
Riverside – September 1, 1989
Blythe – September 14, 1989

At the federal level, the Notice of Intent to prepare the draft EIS was published in the *Federal Register* on November 15, 1989 (copy included in Appendix A). Additional public scoping meetings were held by the BLM and the County:

Desert Center – December 6, 1989
Palm Desert – December 7, 1989
Los Angeles – December 11, 1989 (with SCAG)

Table 1 contains a summary of the responses obtained through this scoping process, presented as a list of issues along with the number of times each issue was raised. The classification of comments into specific issues involved some judgment and, therefore, does not reflect perfectly each and every comment. The list is useful in identifying the general level of concern for various issues. The overwhelming number of comments were requests for information regarding details of the project description and/or alternatives to the project. With respect to specific environmental issues, the most frequently expressed concerns dealt with water quality, public safety, traffic, and air quality.

Copies of the letters received and notes from the scoping meetings are also included in Appendix A.

The issue of most concern to respondents was the protection of groundwater quality in the Chuckwalla Valley. Measures to protect groundwater have been incorporated into the project

TABLE 1
RESULTS FROM SCOPING MEETINGS AND LETTERS

Issues	Number of Comments
Water Quality	55
Effects on aquifer	
Integrity of lining	
Handling of leachate	
Public Health/Safety	46
Sorting of hazardous wastes	
Effects of accidents	
Employee safety	
Traffic/Transportation	29
Inventory of traffic generation	
Effect of trains on local traffic	
Effect of trains on other rail traffic	
Road maintenance	
Air Quality	28
Landfill emissions	
Truck emissions	
APCD review	
Odors	
Land Use	12
Conformance with Desert Plan	
Conformance with Pass Community Plan	
Conformance with pending desert protection act	
Effects on local agriculture	
Effects on aqueduct	
Drainage	11
Accommodation of surface runoff	
Drainage on access road	
Biology	10
Effects on desert tortoise and bighorn sheep	
Socioeconomics	9
Effect on local economy	
Number of employees	
Union	

TABLE 1
RESULTS FROM SCOPING MEETINGS AND LETTERS
(continued)

Issues	Number of Comments
Geology	5
Effect from faults	
Stability	
Effects on recoverable mineral resources	
Recreation/Visual Resources	6
Effect on views from wilderness	
Effect from airborne trash	
Effect from night lighting	
Utilities/Services	3
Effect on schools	
Noise	3
From landfill operations, trains, and trucks	
Cultural Resources	1
Paleontology	1

design, and a thorough regulatory and enforcement program is administered by the California State Water Resources Control Board (SWRCB) and its local Regional Water Quality Control Board (RWQCB) and by the California Integrated Waste Management Board (CIWMB) and the local County Department of Health acting as the Local Enforcement Agency (LEA) for the state. These measures and the existing enforcement apparatus would avoid the potential for significant groundwater pollution.

Other strongly voiced concerns relate to the acceptability of transporting solid waste from outside the County of Riverside for disposal inside the county. This issue is a policy question which must be decided by County officials.

2. List of Agencies, Organizations, and Persons to Whom Copies of the Statement are Sent

State public review of the draft EIS/EIR was initiated on July 9, 1991, by the filing of the Notice of Completion by the County of Riverside with the State Office of Planning and Research, as required by CEQA. Federal public review of the draft EIS/EIR was initiated on July 19, 1991, by the publication of the Notice of Availability in the *Federal Register* by the BLM. The state public review period ends on September 7, 1991, and the federal public review period ends on September 17, 1991.

Ten copies of the draft EIS/EIR were mailed to OPR for distribution to state agencies. Twenty-two copies were also sent to various federal agencies.

Copies of the draft EIS/EIR were placed in the following libraries:

BLM Library
SC-324 A, Building 50
Denver Federal Center
Denver, CO 80225

California State Library
Governmental Publications
Sacramento, CA 94237

Coachella Branch Library
1538 Seventh Street
Coachella, CA 92236

Desert Hot Springs Branch Library
11691 West Drive
Desert Hot Springs, CA 92240

Indio Branch Library
200 Civic Center Hall
Indio, CA 92201

Lake Tamarisk Branch Library
43880 Lake Tamarisk Drive
Desert Center, CA 92239

Los Angeles Public Library
Dept. of Science, Tech, and Patents
630 West Fifth Street
Los Angeles, CA 90071

Los Angeles Public Library
Documents Department
433 Spring Street
Los Angeles, CA 90013

Palm Desert Branch Library
45480 Portola
Palm Desert, CA 92260

Palm Springs Library Center
300 South Sunrise Way
Palm Springs, CA 92262

Palo Verde Valley District Library
125 West Chanslor Way
Blythe, CA 92225

Riverside County/City Public Library
Central Library
Government Publications
3581 Seventh Street
Riverside, CA 92501

San Bernardino County Library
Joshua Tree Branch
6465 Park Boulevard
Joshua Tree, CA 92252

San Bernardino County Library
Twentynine Palms Branch
6078 Adobe Road
Yucca Valley, CA 92277

San Bernardino County Library
Yucca Valley Branch
57098 Twentynine Palms Highway
Yucca Valley, CA 92284

San Bernardino Public Library
Feldheym Central Library
555 West Sixth Street
San Bernardino, CA 92410

UC Riverside Library
Government Publications
201 East La Habra Boulevard
La Habra, CA 90631-0337

and are available for inspection at the following offices:

County of Riverside Planning Department
4080 Lemon Avenue, 9th Floor
Riverside, CA 92501

Bureau of Land Management
California Desert District
6221 Box Springs Road
Riverside, CA 92507

County of Riverside Planning Department
79733 Country Club Drive, Suite E
Bermuda Dunes, CA 92201

Bureau of Land Management
California State Office
Federal Office Building
2800 Cottage Way, Room E-2841
Sacramento, CA 95825

Address prior to 8/1/91	Address as of 8/1/91
Bureau of Land Management	Bureau of Land Management
Palm Springs–South Coast Resource Area	Palm Springs–South Coast Resource Area
400 South Farrell Street, B-205	63-500 Garnet Avenue
Palm Springs, CA 92262	North Palm Springs, CA 92258-2000

In addition, copies were mailed to other agencies, local governments, and interested groups and individuals. Appendix A contains a complete distribution list of the draft EIS/EIR.

E. Federal, State, and Local Permits and Approvals

1. Federal

a. Bureau of Land Management

1) Prepare and publish in the *Federal Register* a Notice of a Realty Action (NORA) concerning the land exchange.

2) Prepare and publish in the *Federal Register* a Record of Decision (ROD) concerning the land exchange and road/railroad right-of-way grant.

3) BLM has entered into a master Memorandum of Understanding (MOU) with the California Department of Fish and Game (CDFG) to consult with CDFG whenever species of concern or sensitive habitat may be affected by a BLM action.

b. U.S. Fish and Wildlife Service

The railroad right-of-way and land exchange approval would require a consultation with the U.S. Fish and Wildlife Service (pursuant to Section 7 of the Endangered Species Act) because the resumption of the intensive use of the railroad and exchange of public lands out of federal ownership could affect federally listed threatened or endangered species.

c. U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers may require a permit pursuant to Section 404 of the federal Clean Water Act for any filling or watercourse diversion activities which would affect jurisdictional waters or wetlands. Construction of drainage improvements within the project site or along the railroad right-of-way may affect drainage or wetlands, requiring this permit.

d. State Historic Preservation Officer

There were no impacts to cultural resources; therefore, no Section 106 consultation is required by the National Historic Preservation Act.

2. State

a. California Integrated Waste Management Board

Issuance of the solid waste facilities permit will be required by the CIWMB.

b. California Department of Fish and Game

An agreement (pursuant to Section 1603 of the California Fish and Game Code) will be required with the California Department of Fish and Game for the alteration of any streambed. In addition, an MOU (pursuant to Section 2081 of the California Fish and Game Code) may be required concerning state-listed endangered or threatened species.

3. Local

a. County of Riverside

The Riverside County General Plan would be amended to establish a Specific Plan Area, and a Specific Plan would be adopted over the project area to establish land use regulations for the landfill and associated activities. A zone change application must be approved also. The approved Kaiser Mine Reclamation Plan will be revised and a Development Agreement approved. The County Department of Health is the LEA acting for the CIWMB. It will issue the solid waste facilities permit.

b. Lower Colorado River Regional Water Quality Control Board

Waste discharge requirements will be established by this agency for the project. Baseline groundwater monitoring is being conducted in accordance with the requirements of the Lower Colorado River RWQCB, and the waste discharge requirements will include an expanded monitoring program, approval of an acceptable liner configuration, and closure and post-closure activities.

c. South Coast Air Quality Management District

An Authority to Construct and a Permit to Operate will be necessary for the landfill gas collection and condensate disposal system. Operation of the thermal combustor must comply with Rule 1150.1, and fugitive dust will be controlled according to district rules.

II. Alternatives Including the Proposed Action

A. Proposed Action

1. Introduction

Mine Reclamation Corporation proposes to develop a Class III nonhazardous solid waste landfill which would accommodate up to 20,000 tons per day. The landfill site would be located in an unused iron ore open pit mine at Eagle Mountain in northeastern Riverside County, California. The project site at Eagle Mountain is located on approximately 4,695 acres, of which 2,280 acres are under BLM ownership. These lands will be transferred out of federal ownership to Kaiser Steel Resources, Inc., in exchange for lands owned by Kaiser Steel Resources, Inc., along the existing Eagle Mountain rail line. The project includes the conversion of the rail line right-of-way granted to Kaiser Steel Resources, Inc., for mining uses between Ferrum Junction on the northeast coast of the Salton Sea and Eagle Mountain. This rail line is approximately 52 miles long, 32 miles of which exist on a legislatively authorized right-of-way, and would be used to transport waste-filled containers from the Southern Pacific line at Ferrum Junction to the project site. A new rail spur, approximately two miles long, would be built from the Eagle Mountain rail line to a container handling yard located adjacent to the southeast portion of the project site.

Waste received by truck would access the site via a proposed extension of the existing Eagle Mountain Road and an existing on-site haul road. A new FLPMA right-of-way would be issued over the entire length of the existing, legislatively authorized Eagle Mountain rail line right-of-way, the existing Eagle Mountain Road, and the proposed Eagle Mountain Road Extension which begins just south of the Metropolitan Water District pumping station. The existing Kaiser Truck Trail legislatively authorized right-of-way would be abandoned. Additionally, the Eagle Mountain Landfill Specific Plan would amend the Riverside County General Plan and the Zoning Ordinance and Map to facilitate initiation of a landfill operation at the Eagle Mountain iron ore mine site.

Several off-site solid waste processing and transfer stations will be necessary to serve the landfill; however, they are not part of the proposed action and are not discussed in detail in this draft EIS/EIR.

2. BLM/Kaiser Steel Resources, Inc., Land Exchange

Federal lands currently within the project area are shown in the California Desert Conservation Area (CDCA) Plan (Figure 3), as being in the following Multiple-Use Classes: Class I - Intensive, Class M - Moderate, and Unclassified. In the original CDCA Plan, nonhazardous

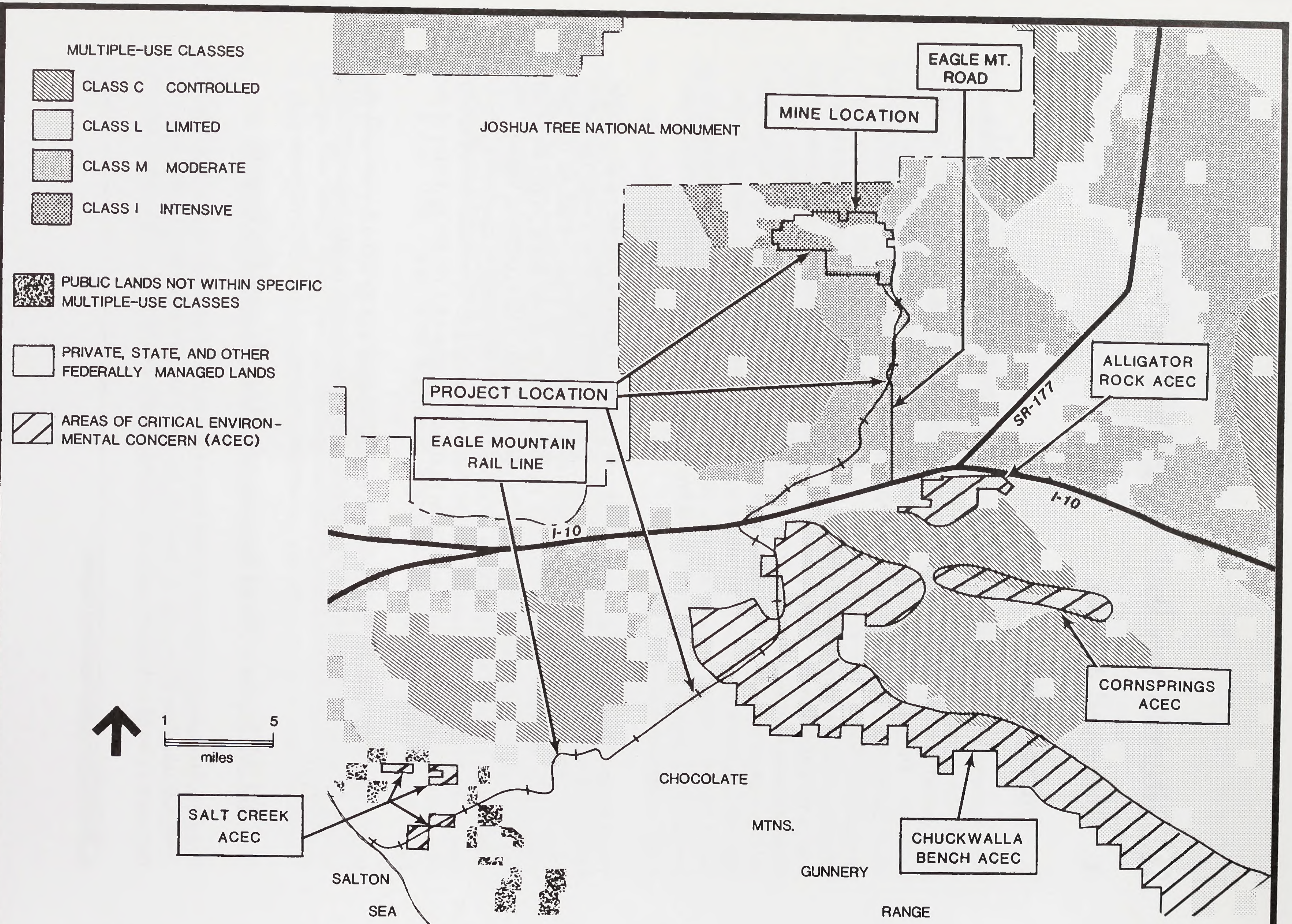

FIGURE 3. CALIFORNIA DESERT CONSERVATION AREA PLAN

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waste disposal sites were allowed in Classes I and M, but a subsequent amendment (1985/#4) prohibits use of public lands for disposal of either hazardous or nonhazardous waste (BLM 1989). Kaiser Steel Resources, Inc., has selected those public lands it wants to be transferred to private ownership. Land currently owned by Kaiser Steel Resources, Inc., will be offered in exchange for those selected lands. The land exchange will be made pursuant to FLPMA, Title II, Section 206. A Mineral Potential Evaluation will be completed, and a current fair market appraisal will be made on both the selected and offered lands. The acreages will be balanced according to these values.

a. Selected Lands

Under FLPMA, BLM will transfer approximately 3,271 acres of publicly owned lands in the Eagle Mountains to Kaiser Steel Resources, Inc. These lands fall within Secs. 25-28 and 33-36, T. 3 S., R. 14 E.; Secs. 30 and 31, T. 3 S., R. 15 E.; Secs. 1, 2, 11, and 12, T. 4 S., R. 14 E.; and Secs. 6 and 7, T. 4 S., R. 15 E., San Bernardino meridian (SBM) (Figure 4). These selected lands include both unencumbered parcels and lands currently encumbered with a variety of unpatented mining and millsite claims. The land exchange process will include a review and appraisal of these claims.

b. Offered Lands

Offered lands are those Kaiser Steel Resources lands to be transferred to federal ownership. These are generally located at certain sites along the Eagle Mountain rail line from Ferrum Junction (on the northeast coast of the Salton Sea) to just north of I-10 (Figures 5-10). Through the land exchange, BLM will acquire lands of prime habitat for the federal- and state-listed threatened desert tortoise. In addition, lands and habitat for other federally endangered, threatened, and sensitive animal and plant species would be transferred to BLM ownership to establish a 20,000-acre nature preserve which includes the Salt Creek Area of Critical Environmental Concern. Acquisition of these offered lands will contribute towards this goal and will result in a more efficient and effective way to manage the preserve area.

c. Reverter Clause

The Eagle Mountain townsite is owned by Kaiser Steel Resources, Inc., but the deed granting ownership includes a clause that title will revert to the BLM in the event the townsite is not used in support of mining. Part of the land exchange process will include a valuation of the reverter clause. This value will be added to the fair market value of the selected lands.

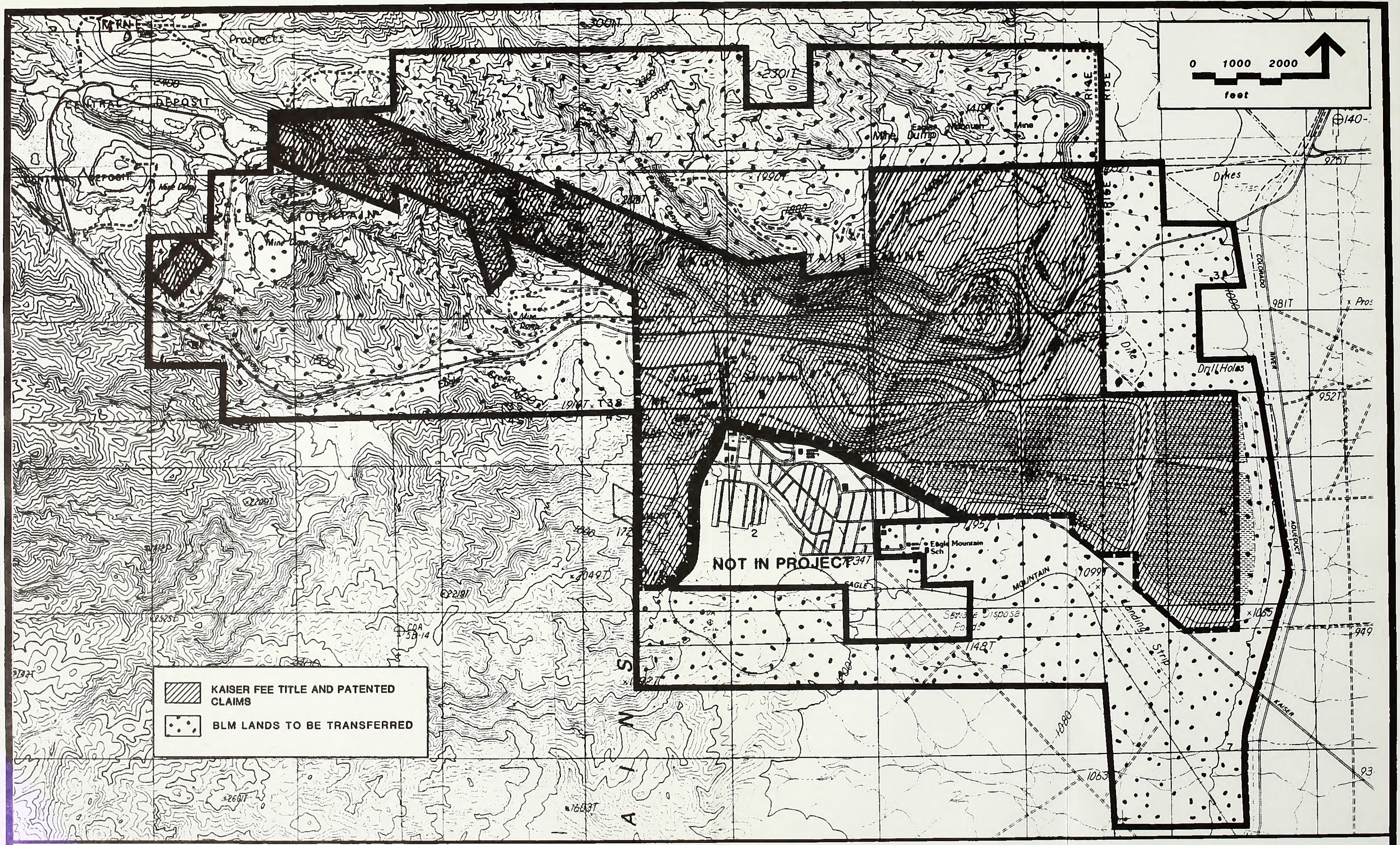

FIGURE 4. BLM LANDS TO BE TRANSFERRED TO KAISER STEEL RESOURCES OWNERSHIP

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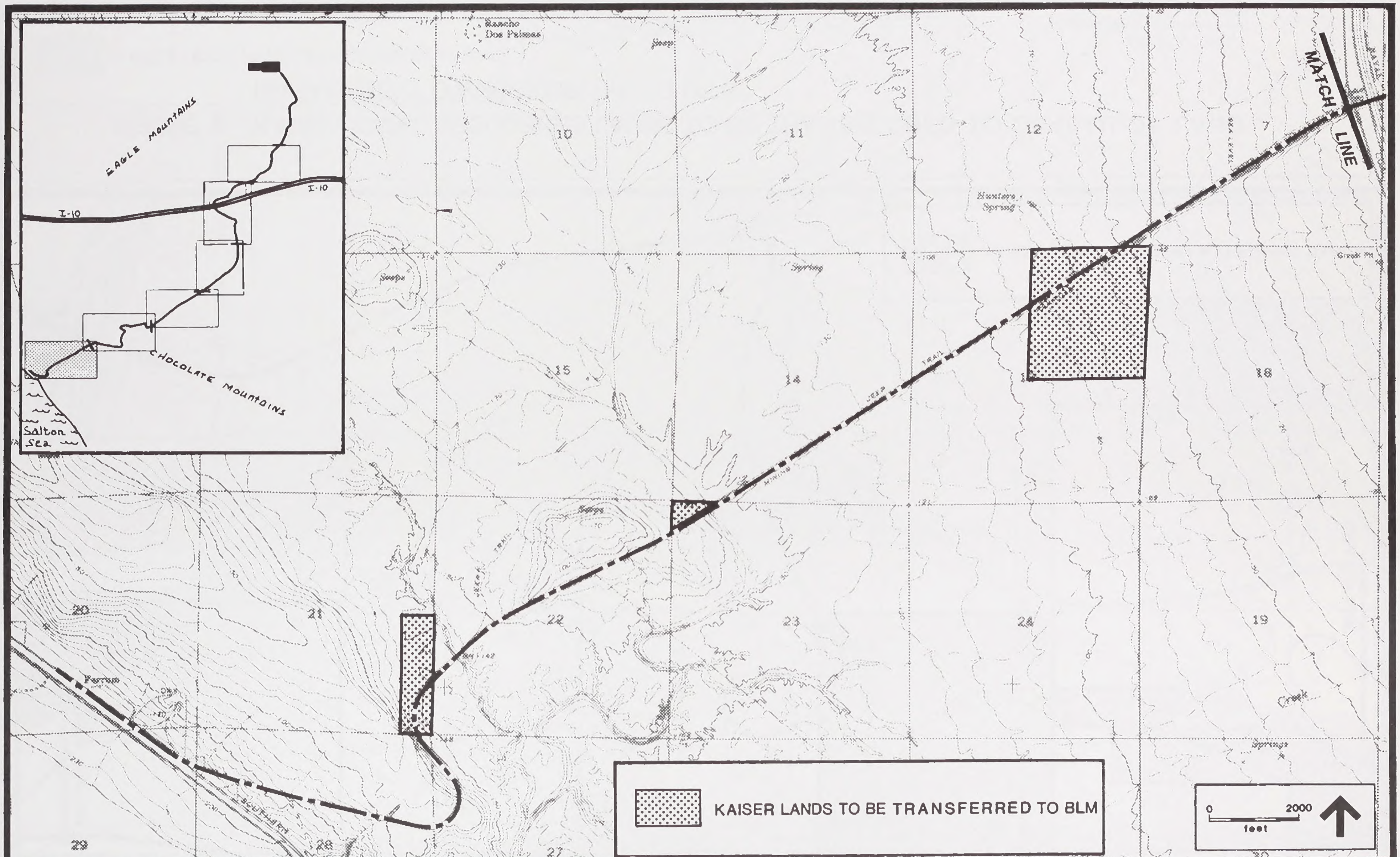

FIGURE 5. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 1 OF 6

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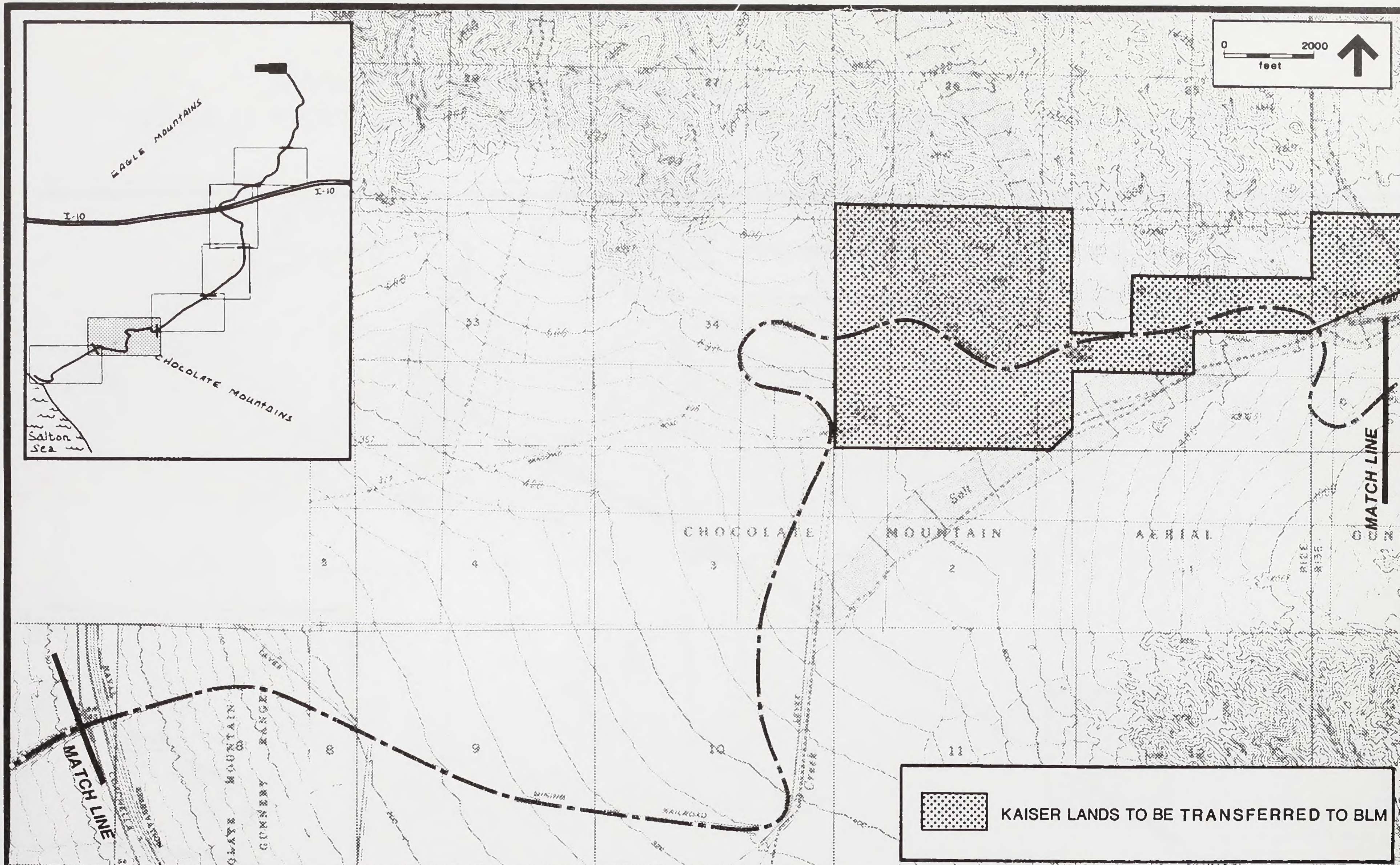

FIGURE 6. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 2 OF 6

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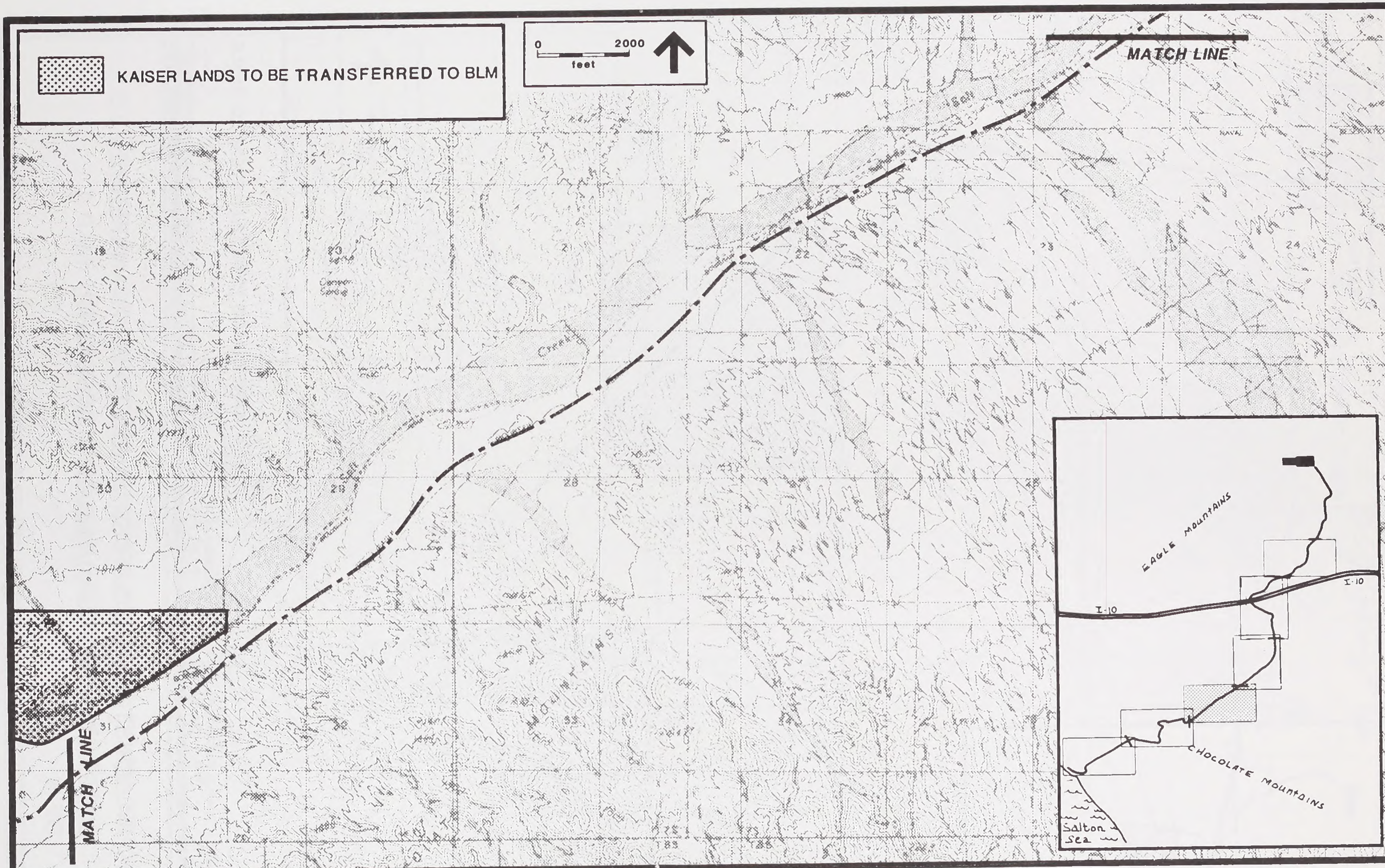

FIGURE 7. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 3 OF 6

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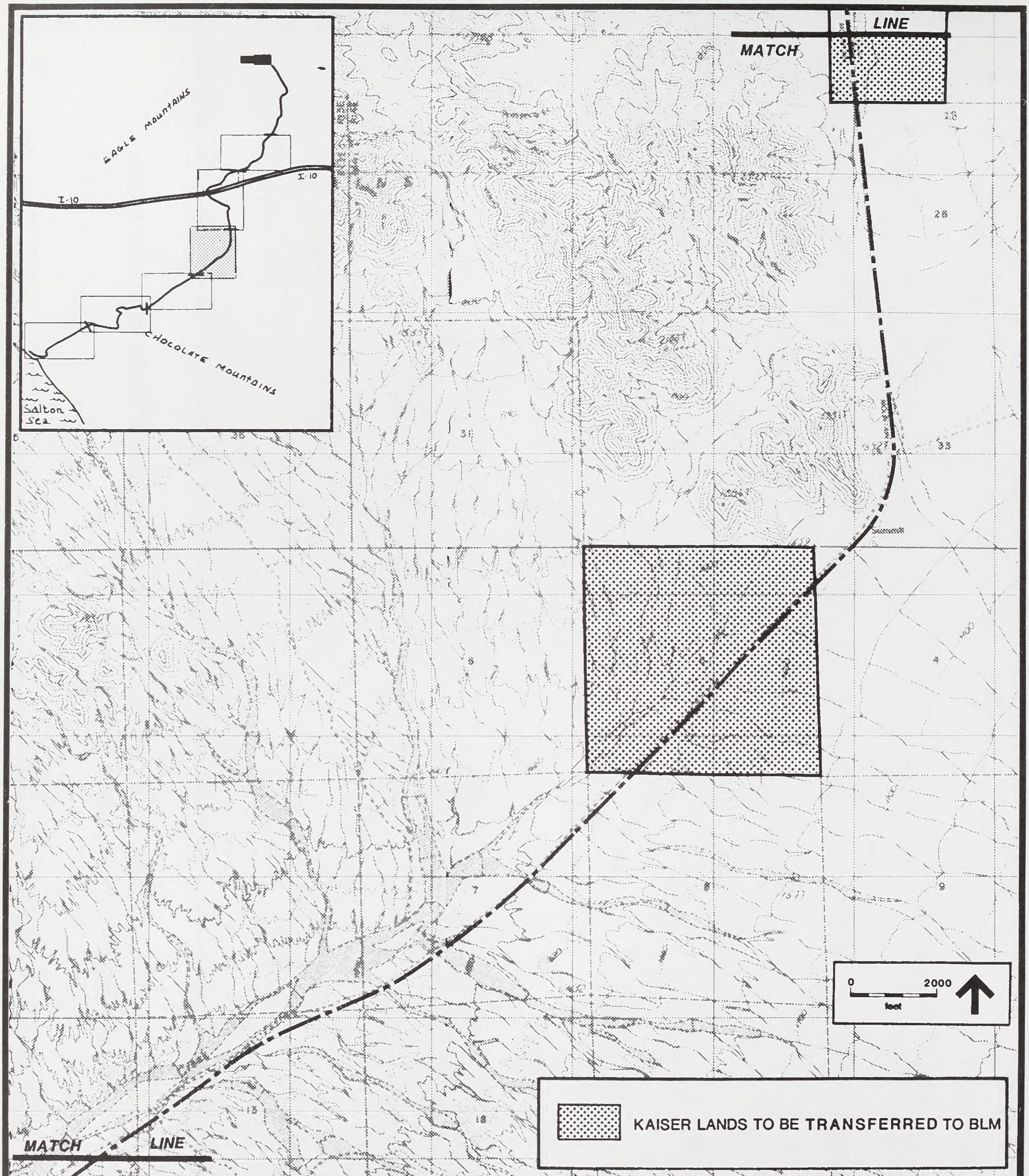

FIGURE 8. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 4 OF 6

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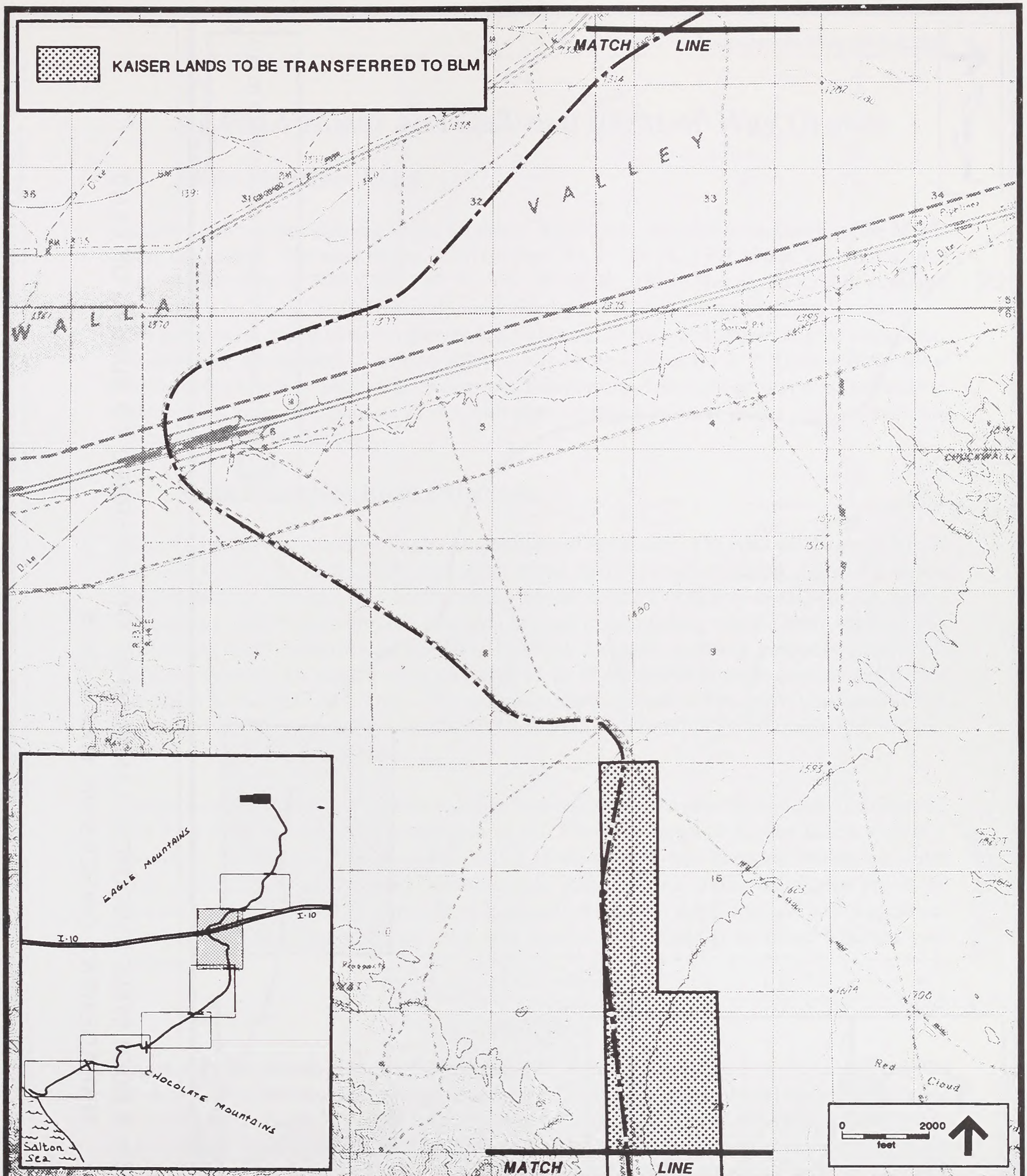

FIGURE 9. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 5 OF 6

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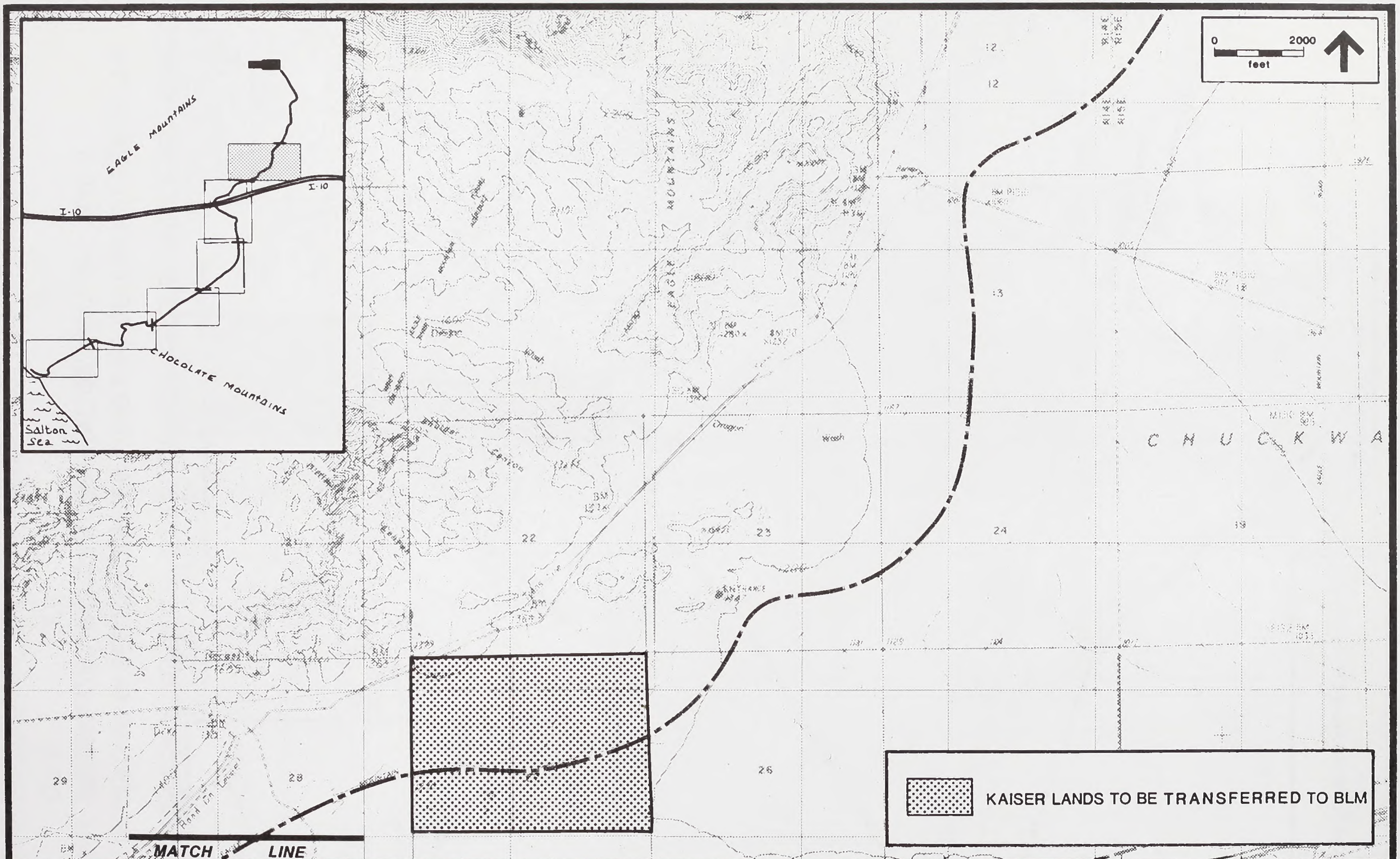

FIGURE 10. KAISER STEEL RESOURCES LANDS TO BE TRANSFERRED TO BUREAU OF LAND MANAGEMENT OWNERSHIP, MAP 6 OF 6

3. FLPMA Roads and Railroad Right-of-Way Grants

a. Eagle Mountain Road

Figure 11 shows the existing Eagle Mountain Road from the I-10 interchange to the MWD pumping station. The road begins in SE1/4 Sec. 30, T. 5 S., R. 15 E., SBM, and runs almost due north ending in NE1/4 Sec. 30, T. 4 S., R. 15 E., SBM. The paved road is currently maintained by the County of Riverside, authorized under federal Revised Statutes Section 2477. The proposed action is to widen the existing two-lane, 20-foot-wide paved road to a two-lane, 40-foot-wide paved road. The total right-of-way being applied for is 110 feet wide to allow for the paved roadway, shoulders, and berms. This portion of the right-of-way is approximately seven miles long. The purpose of this road right-of-way is to serve as the main access route to the proposed landfill site.

b. Eagle Mountain Road Extension

Figure 12 shows the proposed Eagle Mountain Road Extension. The road will begin in NE1/4 Sec. 30, T. 4 S., R. 15 E., SBM, just south of the MWD pumping station and will continue northeasterly at first and then northwesterly before heading northerly to an existing landfill on-site haul road. Approximately one and one- half miles of this proposed route are currently authorized under right-of-way grant LA-0121701 for mining-related purposes only. This partially existing dirt road is approximately 15 to 18 feet wide in most areas and is known locally as the Kaiser Truck Trail. This portion of the truck trail will be converted to a FLPMA right-of-way. The remainder of the Kaiser Truck Trail, currently authorized under right-of-way grant LA-0121701, will be vacated.

The proposed action is to widen the existing portion and build a new 40-foot-wide paved road. The total right-of-way being applied for is 110 feet wide to allow for the paved roadway, shoulders, and berms. This proposed portion of the right-of-way is approximately six miles long. The purpose of this road extension is to lead the truck traffic hauling refuse to the proposed landfill around the townsite of Eagle Mountain into the proposed Phase I container handling yard (see Figure 12) and at a later date into the Phase II container handling yard (Figure 13).

c. Rail Line

Figure 2 in the Introduction of this draft EIS/EIR shows the existing 52-mile private rail line beginning at its intersection with the Southern Pacific line at Ferrum Junction running northerly to a mine site at Eagle Mountain. Approximately 33 miles of the rail line falls on BLM lands. The rail line is authorized under right-of-way grant LA-0121701 for mining-related activities only. This right-of-way will be converted to a FLPMA right-of-way. The purpose of this right-of-way is to allow train transport of refuse containers from the Southern Pacific line at

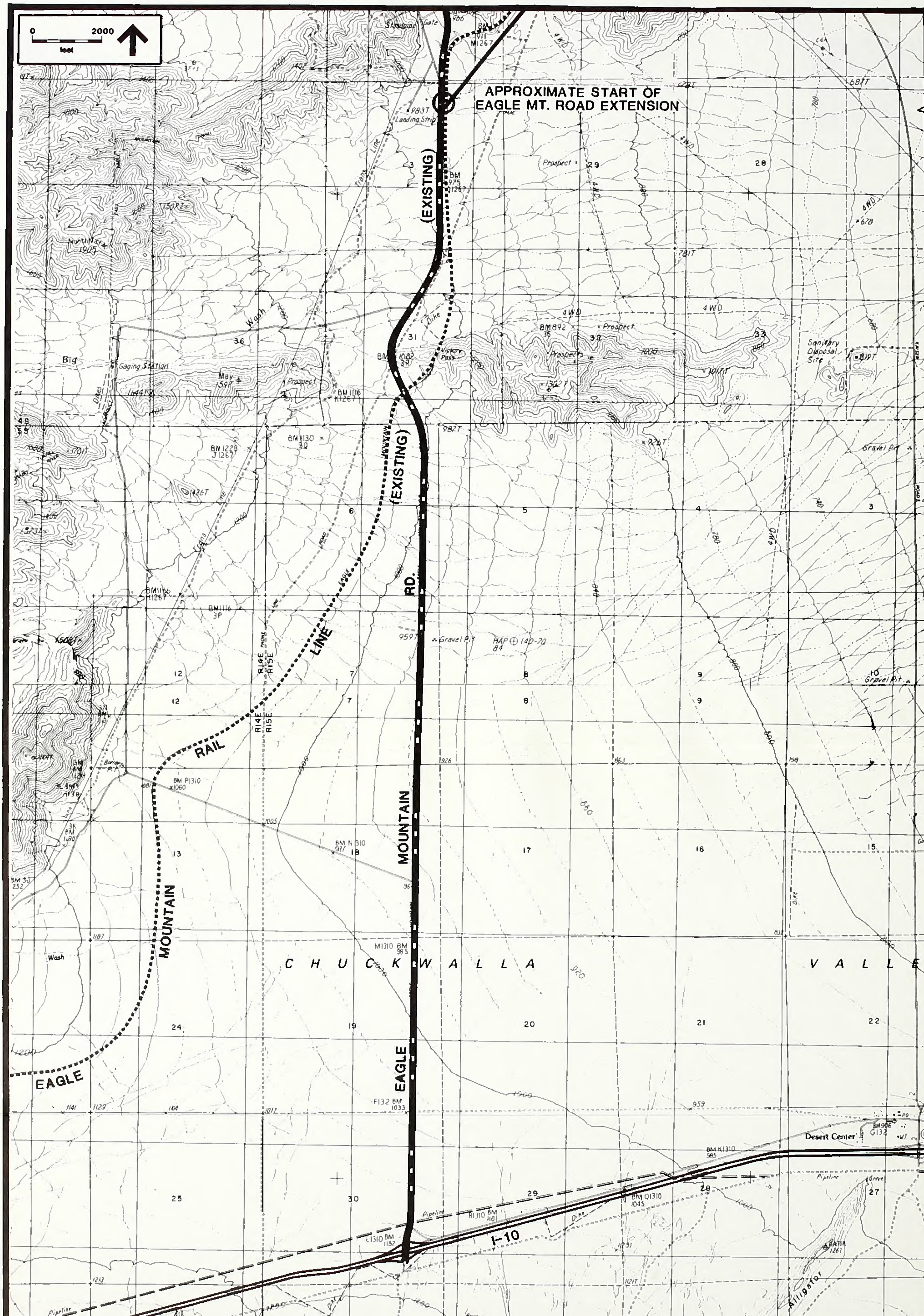

FIGURE 11. EXISTING EAGLE MOUNTAIN ROAD ALIGNMENT

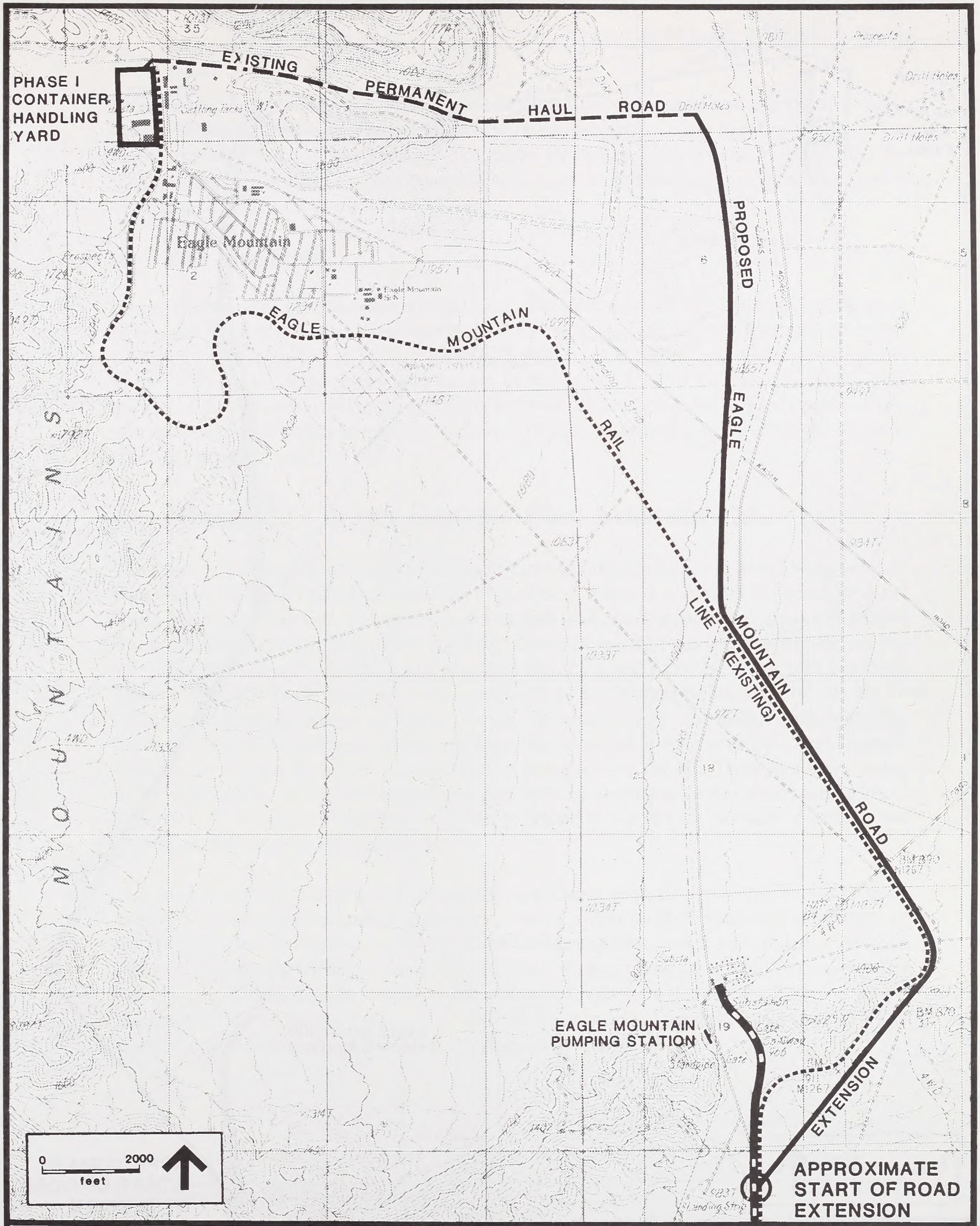

FIGURE 12. EAGLE MOUNTAIN ROAD EXTENSION AND PHASE I CONTAINER HANDLING YARD

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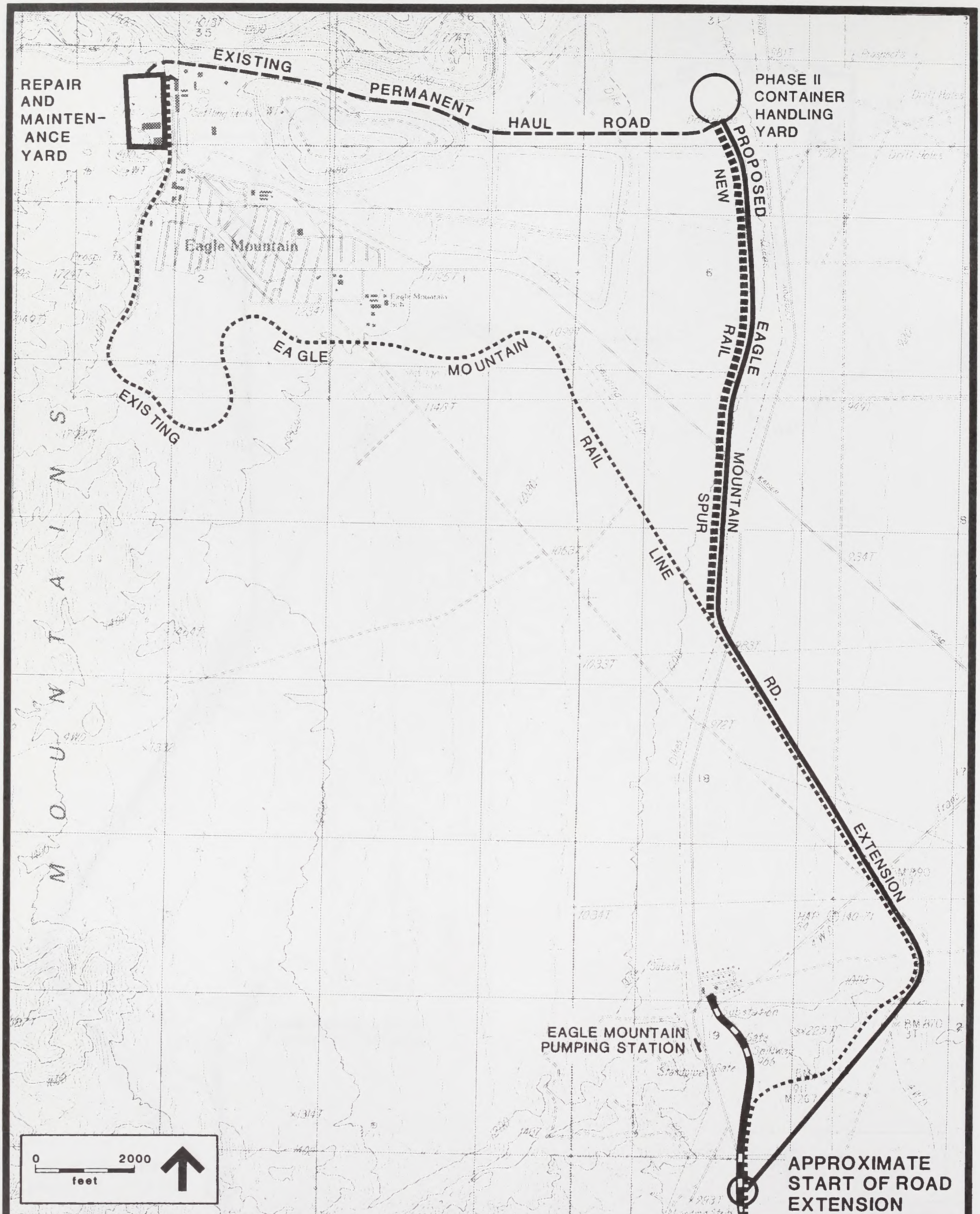

FIGURE 13. EAGLE MOUNTAIN ROAD EXTENSION, RAILROAD RIGHT-OF-WAY AND PHASE II CONTAINER HANDLING YARD

Ferrum Junction to the proposed Phase I container handling yard and/or repair and maintenance facility shown on Figure 12. At the beginning of the project, no more than one train per day would use this Phase I route. At a later date, up to six trains per day will be routed around the Eagle Mountain townsite into the proposed Phase II container handling yard via a rail line spur discussed below.

d. Rail Line Spur

Figure 13 shows the proposed new rail line spur. The new spur will begin just past the location where the proposed Eagle Mountain Road Extension and the existing railroad cross the Colorado River Aqueduct in S1/2S1/2 Sec. 7, T. 4 S., R. 15 E., SBM, and runs northerly to the proposed Phase II container handling facility in W1/2 Sec. 31, T. 3 S., R. 15 E., SBM. This portion of the right-of- way is approximately two and one-half miles long. The purpose of this spur is to route rail traffic around the townsite of Eagle Mountain into the proposed Phase II container handling yard.

4. Riverside County General Plan Amendment

The Eagle Mountain Landfill Specific Plan (SP) would amend the Riverside County General Plan and the Zoning Ordinance and Map to facilitate initiation of a landfill operation at the Eagle Mountain mine site. Figure 14 shows current land use designations found on the Open Space and Conservation Map of the Riverside County General Plan which affect the project site: Mineral Resources, Desert areas, Mountainous areas, and Areas Not Designated as Open Space (ANDOS). Those categories will be replaced by an SP designation supported by the SP exhibits and text. As shown on Figure 15, current zoning of the site includes the following districts: Mineral Resources and Related Manufacturing (M-R-A), Controlled Development Area (W-2), Natural Assets (N-A), and Manufacturing-Heavy (M-H). These individual zones will be replaced by an SP zone designation supported by an ordinance text which can be found in Section III of the SP. The SP zone is being created to support the addition of landfill and associated land uses on the project site.

The landfill will be designed and operated in accordance with all applicable permit requirements. The design of the landfill includes the use of a liner on the bottom and side slopes of the pit; a leachate collection, recovery, and treatment system; and a gas collection system. Mitigation measures for dust control and a number of other planning and monitoring requirements would also be included in the project. On-site drainage improvements that would affect the landfill will be sized to accept 100-year 24-hour duration precipitation events. The SP discusses the relationship of the above activities to the project.

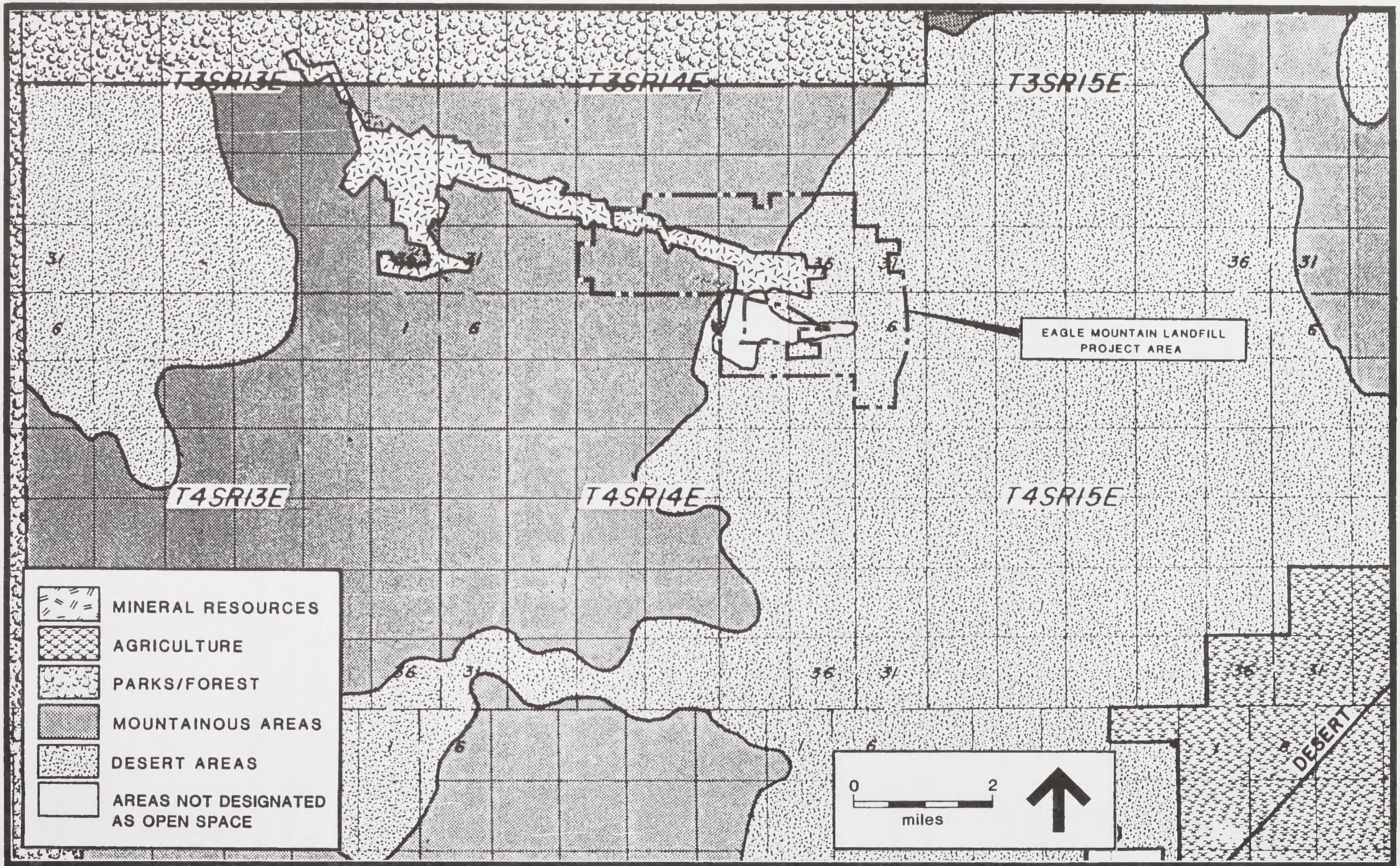

FIGURE 14. COMPREHENSIVE GENERAL PLAN OPEN SPACE AND CONSERVATION MAP

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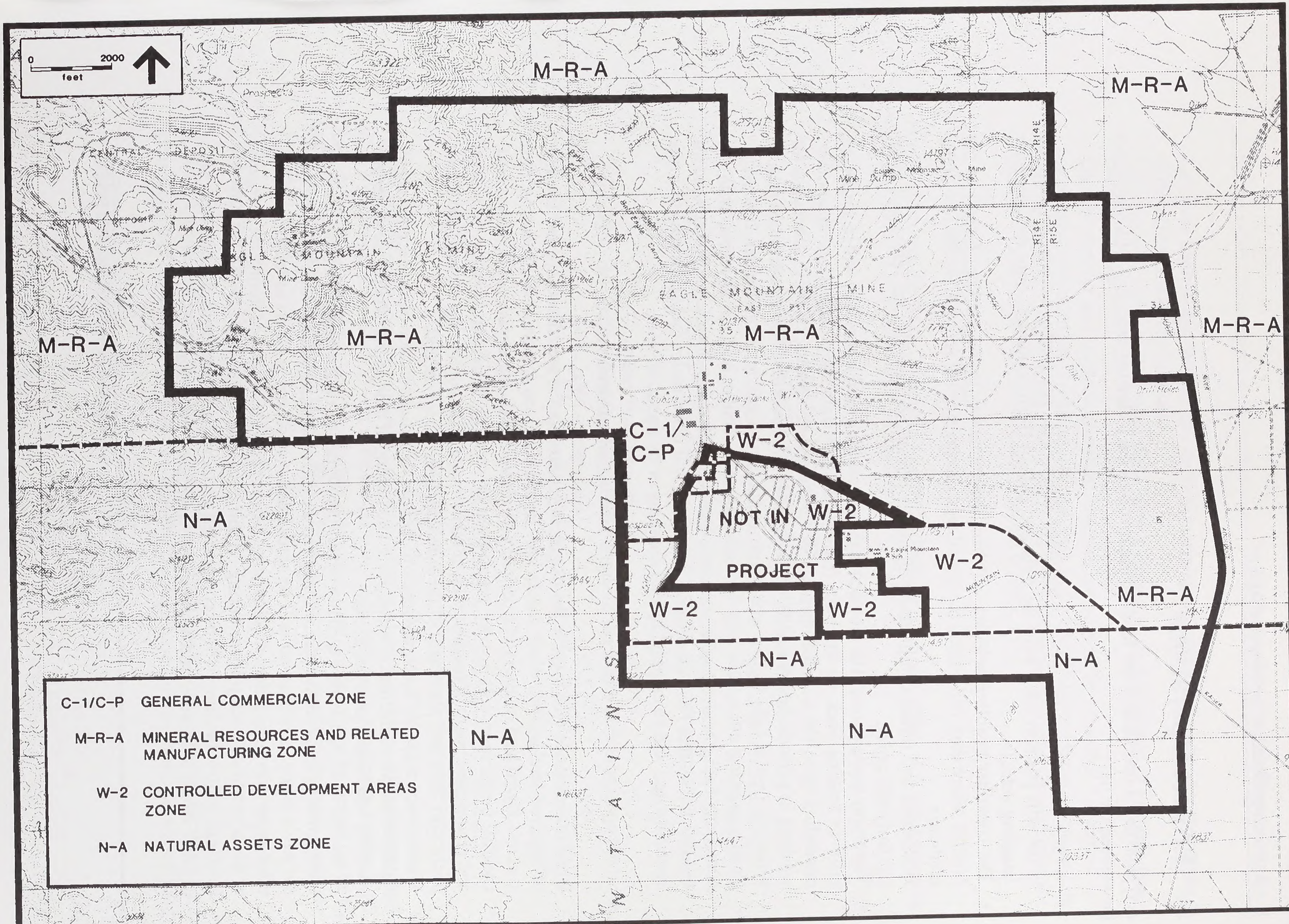

FIGURE 15. EXISTING PROJECT AREA ZONING

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5. Project Operations

A typical day's operation at the landfill site involves the following sequence which reoccurs throughout the day:

- A fully loaded train will arrive at the marshalling yard. An overhead container-handling crane will position itself over the train and unload filled containers onto the container handling vehicles.
- The container handling vehicles will haul the containers to the working face(s) of the landfill where they will unload the containers, discharging the refuse from the rear of the container.
- Bulldozers and refuse compactors will move, spread, and compact the refuse and place the daily soil cover.
- The empty containers will be returned to the marshalling yard where they will be inspected prior to loading back on the train (either the same train they came from or another, depending upon the scale of operations). Damaged containers, or those scheduled for washing or periodic maintenance, will be delivered to the container-maintenance area.
- When the train is fully loaded with empty containers, it will return to Ferrum Junction.
- Trucks carrying containers will be unloaded in a similar manner to trains, with the containers being hauled to the operating face(s) on container handlers. Some standard transfer trucks that have an integral cargo box will drive under their own power to the operating face and be emptied by end dumping or by tipper.

Additional operations that will occur to support the above activities include the following:

- Road maintenance will involve the use of motor graders for the smoothing and leveling of unpaved haul roads. Water trucks will spread water on unpaved haul roads for dust control. Paved haul roads will be periodically cleaned with a road sweeper to reduce dust.
- Landfill preparation will involve preparation of areas by bulldozer, leveling by scraper and grader, placement of crushed rock or other material for contouring the cell, placement of the clay liner and placement of the synthetic liner where needed.
- Maintenance activities for equipment will include shop maintenance of mobile equipment; field preventive maintenance, lubrication, and fueling of mobile equipment; and container washing and maintenance as needed.
- At the end of an operating day, daily cover (coarse tailing or crushed overburden) will be transported by truck, conveyor, or scraper to the active working face(s) for placement over the day's refuse. Daily cover will be spread and compacted in layers at least six inches thick as per operating permit requirements. Water sprays may be used during the recovery of the cover from stock piles or during crushing for dust control.
- Drainage control facilities will be constructed periodically by preparing ditches, trenches, or other works to channel and direct runoff water away from the landfill.

- Leachate control and landfill gas collection piping will be installed to intercept and/or collect these fluids for treatment.
- Litter control crews will provide daily litter pickup and the movement of portable litter control fencing.
- Locally derived and random container loads of refuse will be inspected for hazardous materials and loaded into containers for delivery to the landfill face. Hazardous materials will be collected, temporarily stored (with the appropriate permits) and then transported off-site to a licensed hazardous waste disposal facility.

a. Landfill Site Facilities

Figure 16 shows the Eagle Mountain Landfill Specific Plan Area, which is divided into six planning areas. These areas are described below in Table 2.

TABLE 2
EAGLE MOUNTAIN LANDFILL
SPECIFIC PLAN AND PLANNING AREAS

Planning Area	Use	Acreage	Percentage of Site
1	Landfill area	2,272	48.4
2	Container handling–Phase I	251	5.3
3	Container handling–Phase II	340	7.2
4	Recyclable storage area	322	6.9
5	Coarse and fine tailing storage and process area	465	9.9
6	Open space	1,045	22.6
TOTAL		4,695	100.0

The SP describes the locations of these areas and their associated activities. All buildings shall have a minimum setback of 25 feet from the property boundary and a maximum height of 60 feet. Development standards for the container handling yard are described in greater detail in the Eagle Mountain Landfill Specific Plan. The facilities associated with these areas are described below.

Container Handling Yard

In Phase I, incoming refuse would be delivered by rail and truck to the container handling yard located south of the western portion of the East Pit. During Phase I, trains would use the existing

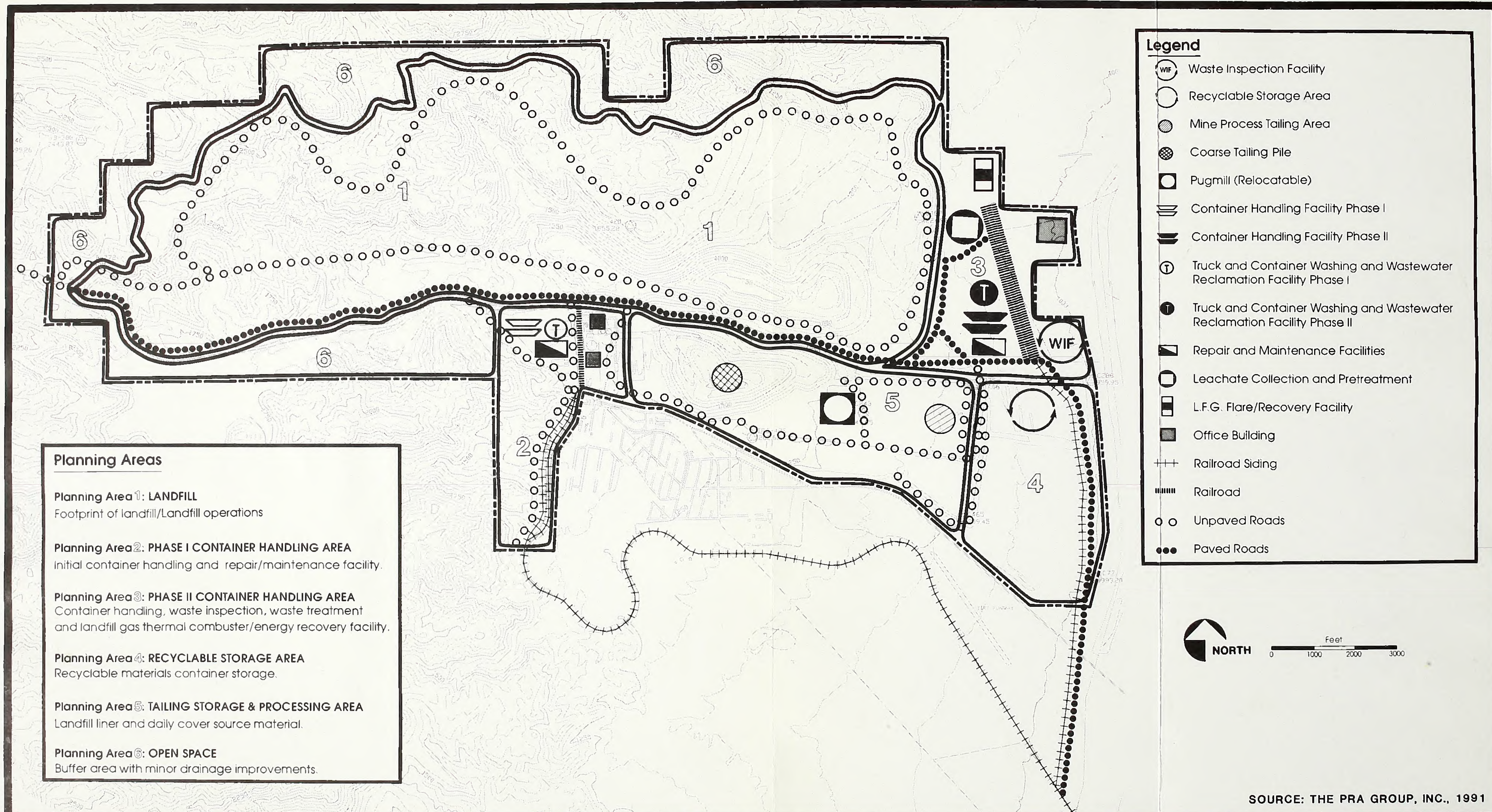

FIGURE 16. PROPOSED LANDFILL SPECIFIC PLAN AREA WITH DESIGNATED PLANNING AREAS

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rail line south and west of the Eagle Mountain townsite and trucks would use the Eagle Mountain Road Extension, constructed east of the townsite, and the existing haul road (see Figure 12). The maximum capacity of the initial container handling yard would be approximately 4,750 tpd consisting of one train load of refuse per day (3,500 tpd) and an additional 1,250 tpd that would be delivered by truck.

In Phase II, incoming refuse would be delivered by rail and truck to the container handling yard located approximately one-half mile from the eastern boundary of the landfill (see Figure 13). Its maximum capacity would be 20,000 tons of refuse per day. During Phase II, trains would use a new rail line constructed east of the townsite and trucks would use the Eagle Mountain Road Extension. Upon the opening of the Phase II container handling facility, the Phase I container handling facility would cease to handle waste.

Although the capacity of the Phase I container handling yard would be less than the Phase II container handling yard, both container handling yards would contain approximately the following:

1) Railroad spur lines or sidings. Trains serviced in the Phase I container handling yard will be divided into two or three segments to accommodate the existing sidings. Sidings in the Phase II container handling yard, each up to 5,000 feet long, would be long enough to allow an entire unit train to be stationed without uncoupling cars and to allow locomotives to couple and uncouple at either end of the unit trains.

2) Container handling equipment. Large forklift-style movers or mobile overhead cranes would be used to move containers on and off trucks; overhead cranes would be used to move containers on and off train cars. Both types of equipment would be fitted with pollution controls on the exhaust to achieve the lowest possible emission rates. The containers will be placed on container handling vehicles and will be hauled to the working face(s) of the landfill where the containers will be emptied. An illustration of a container handling vehicle can be found in Appendix B of this draft EIS/EIR.

3) A waste screening station/inspection facility. This facility, located on or near the Phase II container handling yard, will be capable of receiving and inspecting local waste from Desert Center, Lake Tamarisk, and Eagle Mountain on the order of several tons per day in accordance with an approved hazardous waste load checking program. All other incoming refuse will have been inspected at the initial loading point. Random container loads of incoming refuse shall also be inspected at this facility.

Locally generated waste and random container loads will be delivered and spread on a concrete tipping floor and visually inspected for waste components that would not be accepted into the landfill. These materials will be segregated and stored in accordance with the appropriate regulations. A hand-sorting, visual inspection process is planned. Hazardous materials will

be removed and stored in a small hazardous waste storage area for shipment to a hazardous waste disposal site. Nonrecoverables will be loaded into closed containers for transport to the working face of the landfill for disposal. Throughout this draft EIS/EIR, all references to a maximum tons per day shall include the two to three tons per day of locally derived materials.

All containerized waste received in the container handling area, either by rail or truck, will have been screened to detect the presence of radioactive materials and other hazardous waste. Detection of radioactive materials will be performed both at the materials recovery facilities (MRF) at the container loading point and prior to container discharge at the landfill. This will be accomplished by passing the refuse at the MRF or the containers at the landfill under a detection device to detect materials that are emitting radioactivity. If radioactive materials are detected, intensive manual inspection of the load using hand-held detection equipment will be performed. The offending materials will be segregated from the load and stored in accordance with applicable regulations pending disposal at a licensed facility.

Train and container handling operations would be conducted on a 24-hour basis. These operations include all actions involving delivering a train of cars, positioning of these cars, unloading and reloading of containers, movement of locomotives from one end of the train to the other, and removal of the train back onto the main line. Locational and low-pressure sodium lighting would be used to light these operations.

Energy Recovery Plant

When detectable quantities of methane are found in the landfill gas, MRC will conduct studies to quantify the production rate of methane and to determine other characteristics of the gas. Initially, landfill gas (LFG) recovered from the landfill will be destroyed in a thermal combustor. When a production rate of five million cubic feet per day of methane is achieved, MRC will institute studies to determine if the gas can be utilized economically. These studies will evaluate the use of gas for electrical energy production, the production of pipeline quality or liquified gas for shipment off-site, or the use of gas to power on-site equipment for use at nearby facilities. If it is determined that the methane can be economically utilized, MRC will proceed with the development of an energy recovery plant to replace the landfill flare system (see Planning Area 3 of Figure 16). This may be a reciprocating engine-generator or a steam plant to generate electricity and recover excess heat.

It is estimated that the LFG recovery system could initially generate approximately 16 megawatts of peak electrical power (at the onset of energy recovery operations). After 25 years of landfill operation (year 2017), the LFG recovery system could generate between 24 and 61 megawatts of peak electrical power.

If MRC determines that LFG cannot be economically used, MRC may decide to design, permit, and construct an oxidation catalyst system and later a urea injection system (or equivalent

system) for the thermal combustor before the LFG generation rate exceeds 10 million cubic feet per day of methane. These studies will be updated at least every three years.

Repair and Maintenance Facilities

The existing repair and maintenance buildings would continue in use to maintain the containers, locomotives, railcars, vehicles, and other equipment used on the site (see Planning Area 2 of Figure 16). When necessary, these facilities would be used to maintain and wash vehicles and containers. Containers would be transported from the container handling yard to this area when maintenance or washing is necessary. Wash water will be collected in sumps and reused as necessary. When the water becomes soiled, it will be passed through an oil skimmer for the removal of floating oil and grease. Sludge and other solids will be settled out in a settling tank. A runoff collection system would be designed to convey runoff to a wastewater pretreatment facility. If, after treatment, this wastewater were found to be hazardous, the sump would be pumped into a tank truck and the water taken off site to a licensed disposal facility.

Wastewater Pretreatment Facility

The applicant proposes to construct one or more wastewater pretreatment facilities to pretreat leachate, LFG condensate, and surface runoff from the repair and maintenance facility (see Planning Area 3 of Figure 16). Pretreatment would be provided for biological oxygen demand (BOD) and organics. The "package plant" facilities would pretreat liquids from these sources via aeration, oil separation, and sedimentation tanks. After pretreatment, the effluent would be transported to the existing Kaiser wastewater treatment facility, used for dust control on unpaved roads, or allowed to evaporate. Figure 17 shows the water and sewer plan including booster pumps, water tanks, wastewater treatment facilities, septic tank, and existing and proposed sewer and water lines.

Storage of Recyclable Material at the Site

The SP designates a portion of the site for the storage of recyclable materials recovered from the waste stream at MRFs near the wasteshed for which there is no immediate market (see Planning Area 4 of Figure 16). These recyclable materials will be transported through this area via the proposed new road and rail spur and stored in an area which is surrounded by an existing rock berm. The material will be stored and stacked in shipping containers, each eight feet in height (the stacks will be no more than two containers high, for a maximum height of 16 feet). Double-stacked containers would not be visible except at great distances from higher elevations. The recyclable material shall remain in its original shipping container while within the designated area, and shall be limited to the northern third of the area in order to protect cactus habitat in the area south of the berm. Double-stacking of shipping containers is the maximum height allowable (County of Riverside 1991).

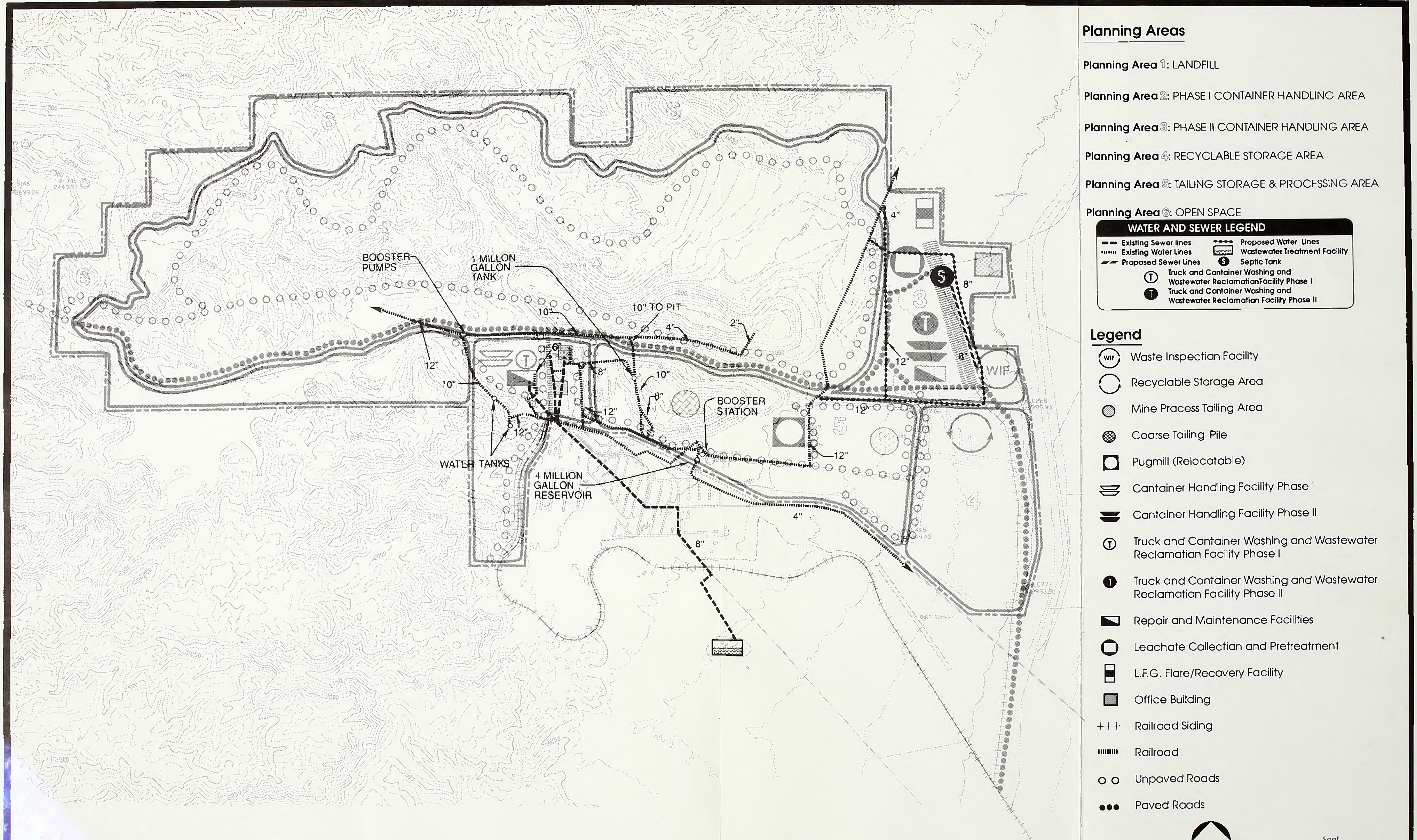


FIGURE 17. WATER AND SEWER PLAN

SOURCE: THE PRA GROUP, INC., 1991

b. Roads, Landfill Site, and Railroad Preparation

Prior to the commencement of Phase I landfill operations, several site development tasks would need to be completed.

Roads

The existing Eagle Mountain Road from the 1-10 interchange to the MWD pumping station will be widened from its current two-lane, 20 feet to a two-lane, 40-foot paved road which will meet all applicable County of Riverside Transportation Department standards. This portion of the right-of-way is approximately seven miles long and will serve as the main access route to the proposed landfill site.

At the start of site development and prior to the beginning of landfill operations, the Eagle Mountain Road Extension will be constructed. This road will provide a routing for trucks as well as a new rail right-of-way that will eventually terminate in the Phase II container handling area. Upon completion of the Eagle Mountain Road Extension, which shall meet all applicable County of Riverside Transportation Department standards, Phase I operations will use this road for all truck transport into the site. Truck traffic on Kaiser Road or the (now abandoned) Kaiser truck road to the site will not be permitted. They will then traverse over the existing main haul road to the Phase I container handling area for off-loading of containers. Some vehicles may be directed to the landfill face for off-loading.

When a rail volume of more than one train per day is achieved, the new spur leading to the Phase II container handling yard will be constructed for train traffic. Trucks will still use the Eagle Mountain Road Extension for access to the site, but will be off-loaded at the Phase II area. Although the emphasis will be shifted to the Phase II area at traffic volumes greater than one train per day, the Phase I area will be kept open as a marshalling area for use as required for emergencies and maintenance. The existing rail terminus will continue to be used for the delivery of materials and supplies, for access to the maintenance buildings, and for locomotive refueling.

Landfill Site

The construction of additional facilities at the existing rail terminus at Eagle Mountain would be required. This would involve the construction of new tracks parallel to the existing tracks, paving the area to permit the use of container- handling cranes and equipment, and construction of a vehicle scale facility. Also, the preparation of the container laydown area for recyclable storage in the unused tailing pond area would be necessary. A small tipping floor and waste sorting area would be needed to receive and inspect trash from the local area.

The preparation of the landfill footprint, involving scaling of loose rock, leveling, and grading of the pit is also necessary prior to commencement of landfill operations. This includes the installation of the clay liner, a composite liner in sections of the landfill, and the installation of LFG and leachate collection facilities. In addition, soon after waste disposal operations commence, LFG and leachate treatment facilities shall be constructed; electrical, water, and sewage distribution systems shall be installed within the processing area. Groundwater monitoring wells shall be installed, with wells added as landfill operations expand. The construction of permanent drainage works and temporary diversion works both on and around the landfill operating area are needed. The existing offices, maintenance shops, laboratory and warehouse need to be refurbished, and the erection of security lighting and fencing is needed throughout the site.

Prior to the Phase II operations of the landfill (three to five years after start-up), additional work would be required, primarily at the east end of the project area. Additional tracks and container handling areas would be developed to process the additional waste tonnage per day. Up to 16,000 feet of rail tracks would be required. The container handling areas would be paved to permit efficient unloading of containers by straddle crane. An office complex of trailers would be constructed and landscaping installed. A more permanent LFG and leachate treatment facility would be constructed and additional sewage holding tanks would be required.

Railroad

The existing Eagle Mountain rail line will be used to transport up to one train per day into the site. The existing terminus (modified to add additional spur[s]) will be used for this train during Phase I operations. When a volume of more than one train per day is achieved, the new spur leading to the Phase II operations container handling yard will be used for train traffic.

Prior to the use of the existing Eagle Mountain rail line, repair, upgrading, and maintenance activities, though minimal, must be accomplished. Recent inspections of the line show that it is in relatively good condition primarily as a result of the excellent construction and maintenance standards that were applied during its operation. Further, the very dry climate in the desert has kept tie rot to a minimum.

The specific activities required are as follows:

Track Alignment. Although the heavy-gauge track presently installed is in good condition, subsidence and earth movement has caused some sections to come out of alignment. The track in these areas will be realigned using a rail tampering and/or gauge plates. Some small sections of track may need to be replaced. These operations are usually conducted from the rail right-of-way using standardized rail construction/maintenance equipment.

Tie Replacement. A number of ties will have to be either replaced or plugged to accept new spikes. Although high-quality ties were installed in the past, there has been no tie maintenance since 1986. In this period of time, some of the ties have been subjected to dry rot and will require replacement. Additionally, tie maintenance during the final days of the rail operation was minimal, and some spike holes have become enlarged. It is intended to replace about 11,000 ties (out of a total of some 250,000). Other ties will be "plugged" at the enlarged spike holes using wooden plugs or an injected foam to permit their continued use. Plugging closes and strengthens the oversized hole so that a spike can be driven into the tie.

Ballast Regulation. Regulation of the ballast on the existing right-of-way will be required for the entire length of the track. This will be accomplished by using a "ballast regulator" which is a machine used to loosen, level, redistribute and compact the stone ballast on the line. This is required as some of the ballast has been eroded, other has been shifted so as not to provide adequate support to the ties. A ballast regulator is a machine that rides on the rails, and while moving, performs the above operation. The ballast regulator also removes vegetation growing in the ballast.

Culvert Maintenance. Drainage is vitally important to the integrity of a rail right-of-way. At Eagle Mountain, many of the existing culverts have been partially or completely filled with debris and vegetation. Others have had the earthen support around the inlet or outlet (or both) eroded away. Still others were abandoned during the final stages of rail operation, and must be reinstalled. It is proposed to conduct culvert cleaning operations using a high pressure water jet to flush debris from the pipes. Repair and replacement will be accomplished by placing additional earth beneath those areas that have been eroded. New culverts will be installed by excavating the road bed, installing the new culvert pipes, and back filling and reconstructing the road over them.

Bridge Repair. Several of the bridges on the line have had moderate erosion around the footings. The supports of others (particularly the wooden bridges) have become loosened and require strengthening. These bridges are primarily located north of Interstate 10. Excavation around the damaged or missing footings followed by replacement of the sub-base with ballast or concrete will be required. Similar work will be required at non-bridge locations near the mine site that were washed away during a storm in the summer of 1990.

Vegetation Control. Vegetation, including trees, has become established in the right-of-way particularly near the southern terminus of the line near Ferrum Junction. These trees will be cut back from the road bed using chain saws, axes, etc. Vegetation growing elsewhere on the right-of-way such as sage brush or grass will be removed by hand if not handled during the ballast regulation activities.

Oiler Maintenance. Oilers are installed at curves on the track and when activated by passing rail car wheels inject a small squirt of grease onto the track to reduce wheel-track friction.

These oilers have become clogged with dry grease, and must be cleaned out by hand and refilled with fresh grease prior to operations commencing.

Endangered Species Protection. As part of the program to ensure minimal impact on endangered species, particularly the desert tortoise, certain activities such as the installation of special culverts for rail under-crossings and tortoise fencing will be conducted. This construction work will be performed in a similar manner to culvert maintenance. Greater detail concerning desert tortoise mitigation measures is discussed in the biology section of this draft EIS/EIR.

c. Landfill Operation

The main portion of this draft EIS/EIR, and of the various permits and actions necessary for the project, focuses on the establishment of a Class III landfill (nonhazardous municipal solid waste and construction debris waste) at Eagle Mountain using the existing large open pit and related disturbed areas formerly operated as an iron ore mine. The landfilling of the area will reclaim it to a more natural landform. This site would serve as a regional site for the land disposal of solid waste generated primarily in southern California.

State law and regulations (Chapter 15 of Division 3 of Title 23 of the California Code of Regulations [CCR]) regulate the disposal of four types of wastes including hazardous waste, designated wastes, nonhazardous solid waste, and inert wastes. This project will accept only nonhazardous solid waste and inert wastes. As defined in Chapter 15, nonhazardous solid waste consists of garbage, trash, refuse, paper, rubbish, industrial waste, ashes, appliances, food waste, and other materials provided that such wastes do not contain wastes which must be managed as hazardous waste or wastes with soluble pollutants in concentrations that exceed water quality objectives. In the event that radioactive materials are detected, the County health department would be notified immediately. Such materials would be removed in accordance with procedures specified in the project's solid waste facilities permit.

Processing and Transfer Stations

The size, location, and operation of any processing and transfer station would have to be determined by the community in which it is located. For a typical to large processing and transfer station of 3,000 tpd capacity, a site of about 10 to 30 acres would be necessary and an enclosed structure of about 100,000 square feet would be needed to house the operation. Given the size requirements and the operational preference or desirability to locate adjacent to a rail line or spur, it is likely that transfer stations would be located in existing industrial areas. The shipping containers are 40 x 8 x 8 feet and each can carry about 25 tons of compacted trash (when loaded for a rail haul). Thus, a typical transfer station of this size would generate about 140 containers per day, or enough to load 14 train cars, which would be a typical train length.

The general operation of a processing and transfer station would include the following steps:

1) Delivery of Refuse by Local Truck. The same public or commercial waste haulers that currently carry trash would deliver it to a processing and transfer station. Source-separated materials would be delivered separately to the processing and transfer station for specific handling. As with a landfill, the trucks would be weighed when they enter the facility.

2) Tipping Floor. The waste would be dumped onto a concrete floor by the delivery trucks. On the tipping floor, the waste would be spread and examined by workers. Any unacceptable materials, which include liquid waste, hazardous waste, sewage sludge, incineration ash, radioactive, biological, or infectious waste, or other special solid wastes would be diverted for special handling in accordance with procedures established in solid waste facilities permits which govern the operation of these facilities. Residual materials for recycling could be removed on the tipping floor.

3) Waste Separation. After the waste has been inspected for the occurrence of hazardous materials, it may, depending upon composition, be processed for the removal of recyclable materials. Recyclable recovery may occur by manually removing bulky materials such as cardboard or wood from the waste while it is on the tipping floor. More sophisticated techniques for the removal of recyclables will include manual and mechanical processing of waste using shredders, picking belt conveyors, air and gravity separation devices, and magnetic and/or electronic separation equipment. The purpose of the recyclable separation is to remove as much of the recyclable material as is feasible.

4) Compaction. Workers would load the residue into a large compactor which would compress it and load it into the transport containers. The containers are the same as large intermodal transport containers.

5) Loading. A large container handler would load the containers onto waiting railcars. Each railcar, designed to carry these containers, holds 10 containers stacked two high.

There are several possible variations on this description. For example, in some systems, solid waste is moved by conveyor belt through a room where workers manually remove material that is either unacceptable or that can be recycled. The loaded containers could be moved and loaded onto the railcar by overhead crane. In any event, all processing and transfer stations involve some screening of waste and then consolidate the waste so it can be handled in larger volumes.

Rail Transport

MRC proposes that up to a maximum of six trains per day would be delivered to the project site. The project would use the main Southern Pacific rail lines and locomotive power for

delivery of containers from the metropolitan areas to Ferrum Junction. MRC will arrange scheduling of refuse unit trains with Southern Pacific on a contractual basis to prevent any conflict between ongoing rail operations and trains being utilized for the landfill project.

The daily maximum of six trains would traverse the Banning Pass and Coachella Valley and make the run from Ferrum Junction to Eagle Mountain. From Ferrum Junction to the site, trains would be powered either by MRC or Southern Pacific locomotives.

Unit trains would consist of one or more diesel electric locomotives carrying up to 14 railcars. The railcars would be "twin stack," similar to those manufactured by Gunderson and Greenbrier Intermodal. Each car would be 256 feet long, coupled at each end to the leading or following car. Because of this length, the cars are not rigid, but are articulated to allow them to negotiate rail curves. Each car has a well-type configuration which holds two 40 x 8 x 8 foot containers. Thus, each car carries 10 containers, and each train, 140 containers.

Each train would be less than 4,000 feet long and carry approximately 3,500 tons of refuse. This length is somewhat shorter than most main line trains and approximately the same length as the trains previously used by Kaiser which formerly carried ore from the Eagle Mountain mine to Fontana.

Truck Transport

During the beginning phase of operations, an estimated 1,250 tpd of solid waste would be delivered to the landfill from local areas in Riverside and San Bernardino counties (see above). This would generate about 60 daily trips to the landfill. During maximum operations, an estimated 4,000 tons per day of solid waste would be delivered to the landfill. This would generate approximately 200 daily round trips (400 one-way trips).

The refuse disposal trucks would be three-axle truck tractors or two-axle semitrailers carrying the filled solid waste containers. Alternately, specially designed top loading trucks fitted with solid doors could be used. In either case, the solid waste load would be fully enclosed within a solid container. Typical payload weights would be 40,000 to 45,000 pounds and total loaded weight would be approximately 80,000 pounds.

Truck traffic to the Phase I container handling yard would use Interstate 10 and the existing Eagle Mountain Road, located approximately two miles west of Desert Center. From Eagle Mountain Road, approximately six miles north of Interstate 10, the new Eagle Mountain Road Extension would provide access directly to the Phase II container handling yard. The last two miles of this private road would be realigned adjacent to the new rail spur to enter the Phase II container handling yard. A new traffic control (stop sign or light) would be placed at the intersection of this new road and the existing County-maintained Kaiser Road.

Container Transport to Working Face of Landfill

From the container handling yards, the containers of refuse would be transported to the working face of the landfill by container handling vehicles. These special trucks will be semitrailers capable of carrying one or two containers. They will be self-dumping (i.e., they will have a dumping platform added to the trailer configuration). Hoist mechanisms will be hydraulically operated, with the hydraulic cylinder located on the trailer with the remainder of the hydraulic system located on the truck tractor and powered by the truck engine. The dumping platform will be designed to discharge refuse from the rear of the trailer.

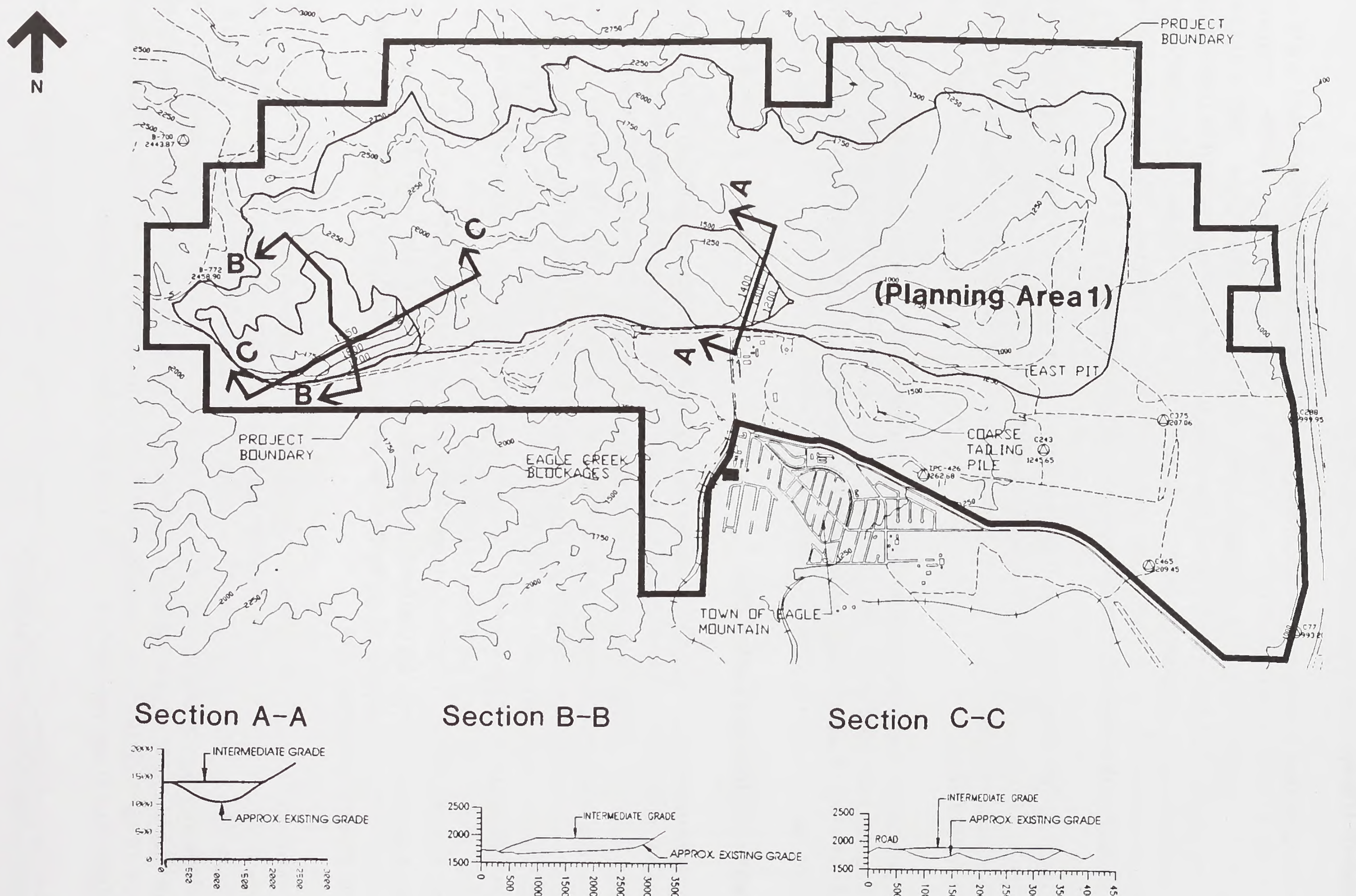
All container-handling vehicles will be designed to operate at a maximum speed of 40 miles per hour. This maximum speed, vehicle gearing, traffic pattern, and haul road design will enable these vehicles to maintain an average speed of 25 miles per hour (not including maneuvering time).

Both permanent and temporary haul roads would be constructed within the landfill site. The existing haul road previously prepared for mining activities will be utilized for both Phase I and II. This permanent road would end in temporary haul roads which would continue to the working face(s) of the landfill and other operating areas.

Deposit of Refuse and Daily Cover

Project Sequencing. Landfill operations would start in the southwest portion of Planning Area 1 to an elevation of 1,950 feet MSL. After a series of drainage improvements have been made, landfill activities will be initiated in the westernmost portion of the East Pit. The first phase of the project sequencing would last from 0 to 10 years (Figure 18). The second phase of the project sequencing (approximately 11 to 75 years) would continue from the west end of the East Pit to the west end of the landfill to final elevations (Figure 19). The third phase of the project sequencing (approximately 76 to 85 years) would fill the northeasterly portion of the landfill area to its final elevation (Figure 20). The final phase of the project sequencing (approximately 86 to 115 years) would fill the East Pit to its final elevation (Figure 21). This sequence of landfill operations is not to be confused with the Phase I and II operations which reference a level of tonnage of waste haulage per day which triggers the construction and use of the Phase II container yard.

As shown in Figure 22, the surface of the landfill would be built up in cells or lifts. A lift is a series of cells of approximately the same height at the same elevation. The cells form the basic building blocks of the landfill. Composed of waste compacted by heavy equipment, the resulting cell is enclosed by soil on all sides as refuse is deposited and then covered each day. When the final grade of the landfill is reached, it would be buried with a final cover as described below in the "Final Cover" subparagraph. Landfill operations would be conducted during daylight hours only (approximately 10 to 14 hours per operating day).



SOURCE: SMITH, PERONI AND FOX

FIGURE 18. LANDFILL SEQUENCE I, 0 – 10 YEARS

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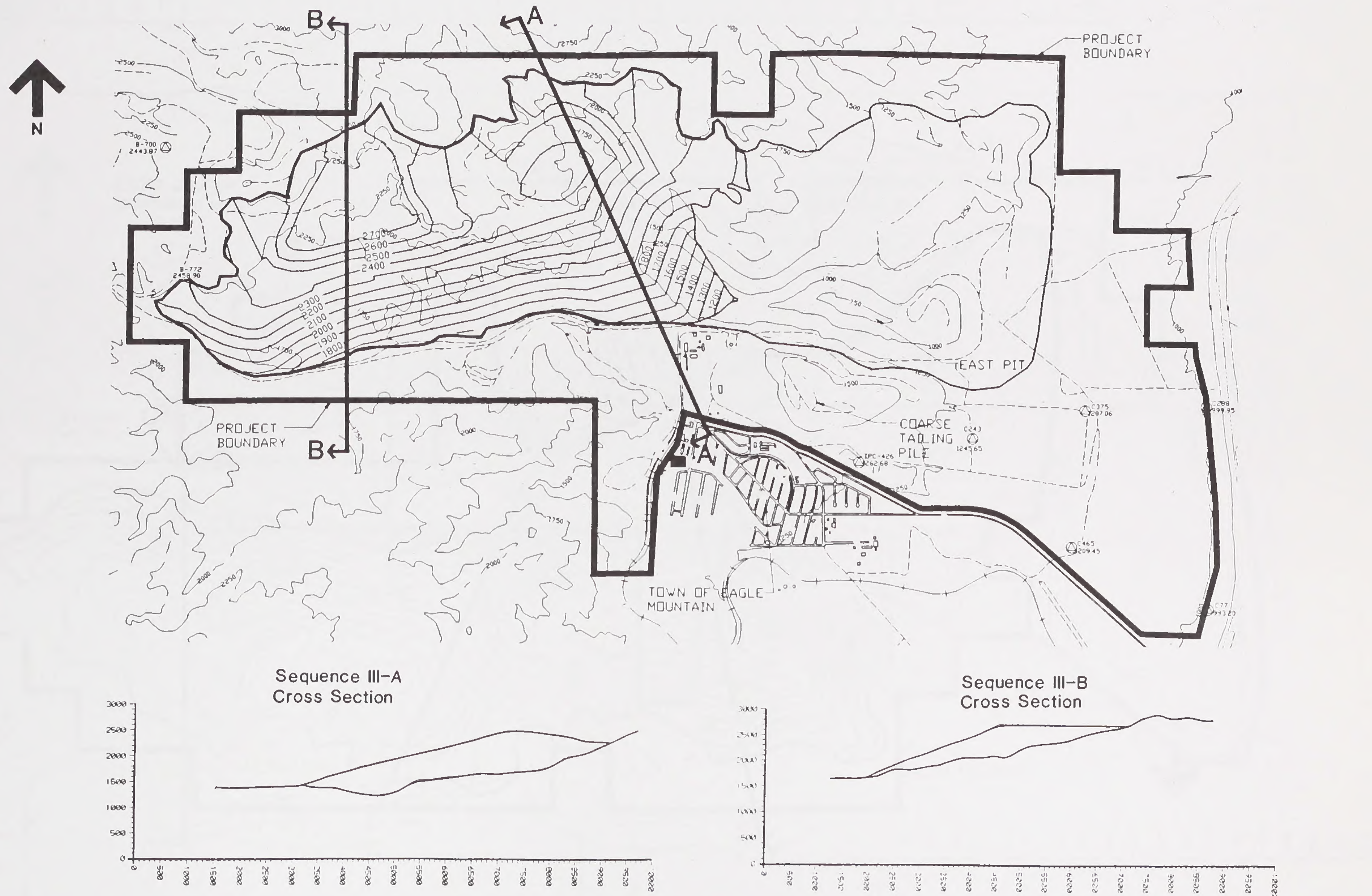

SOURCE: SMITH, PERONI AND FOX

FIGURE 19. LANDFILL SEQUENCE II, 11 - 75 YEARS

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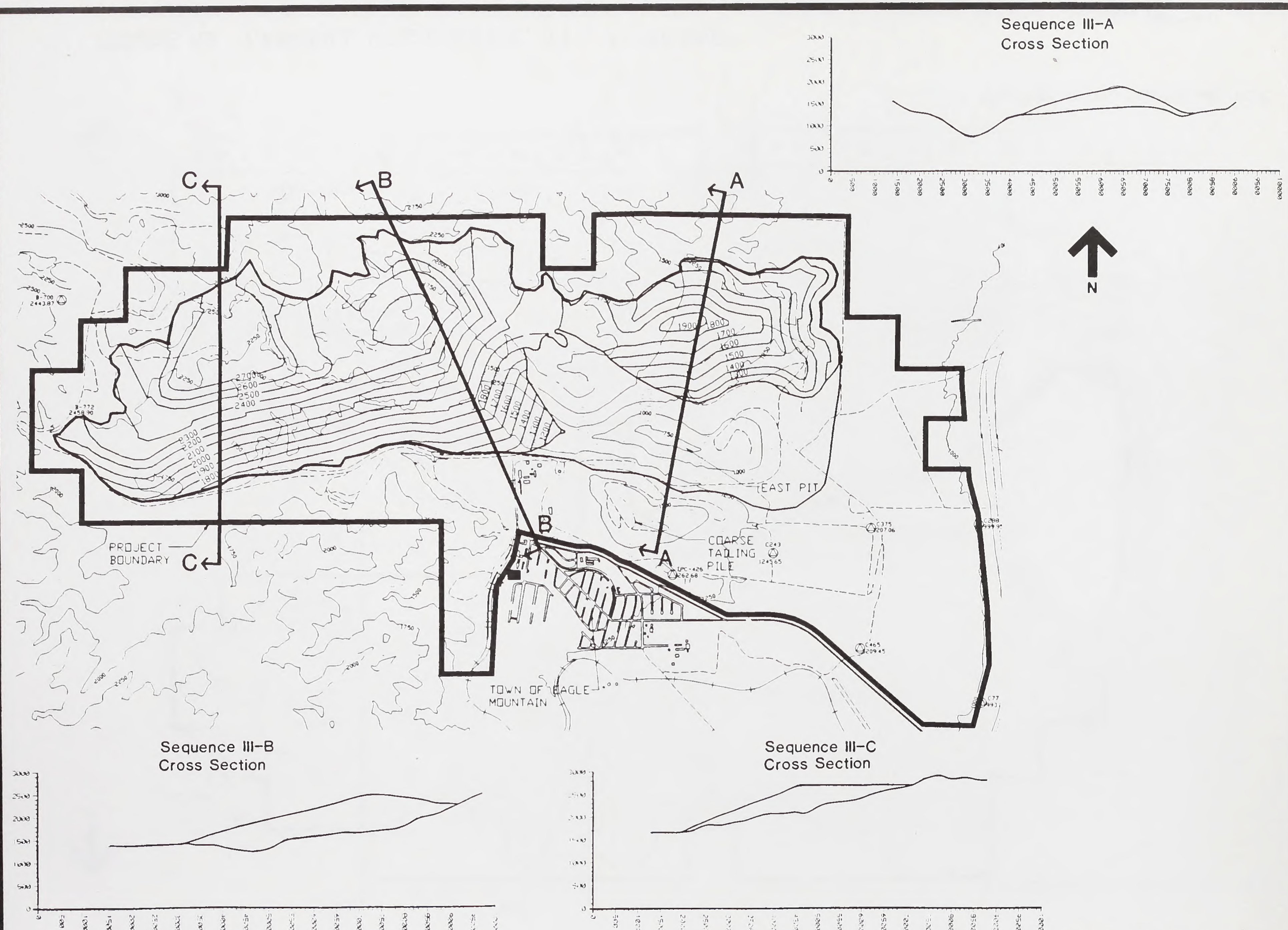

SOURCE: SMITH, PERONI AND FOX

FIGURE 20. LANDFILL SEQUENCE III, 76 - 85 YEARS

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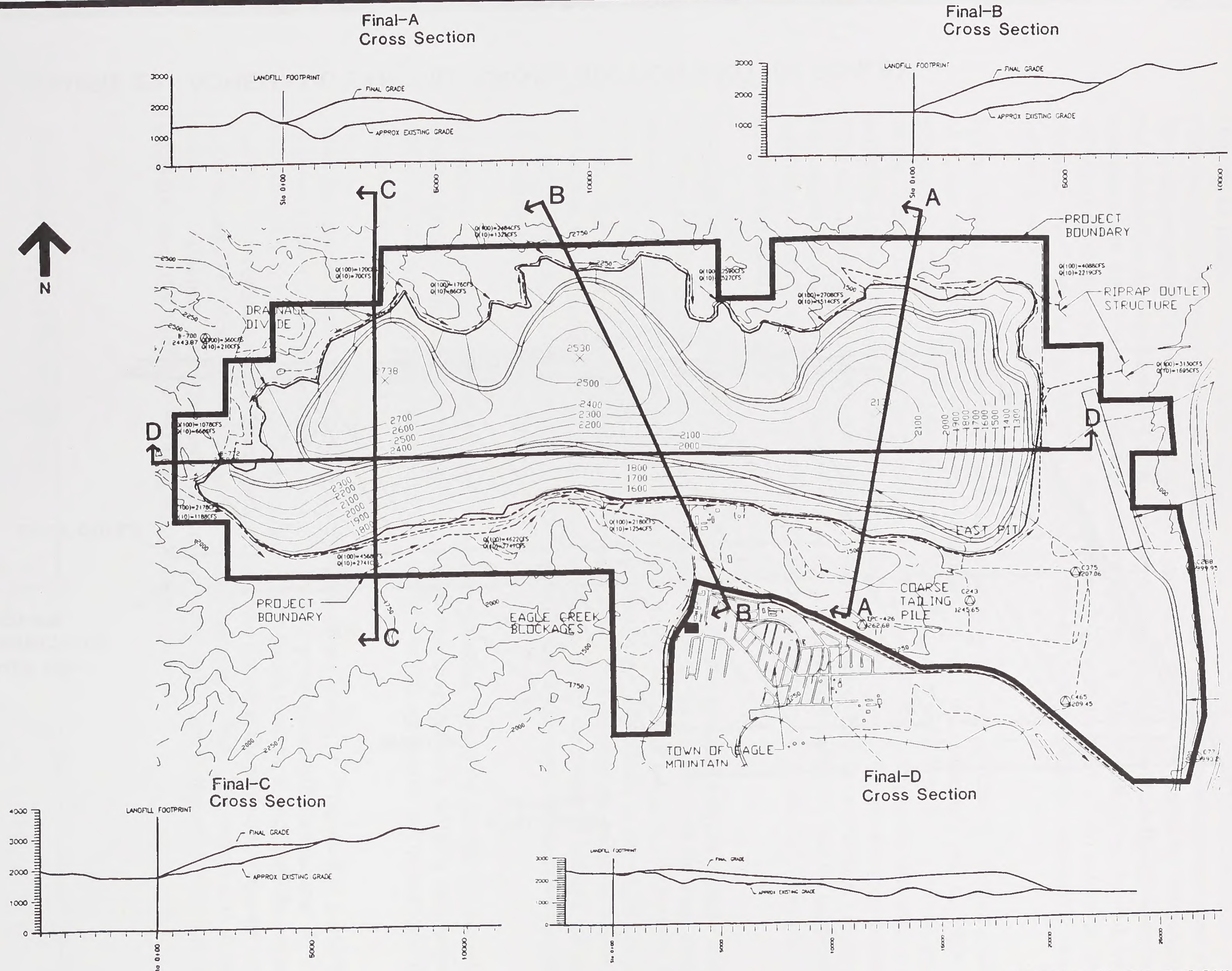

SOURCE: SMITH, PERONI AND FOX

FIGURE 21. FINAL LANDFILL SEQUENCE, 86 - 115 YEARS

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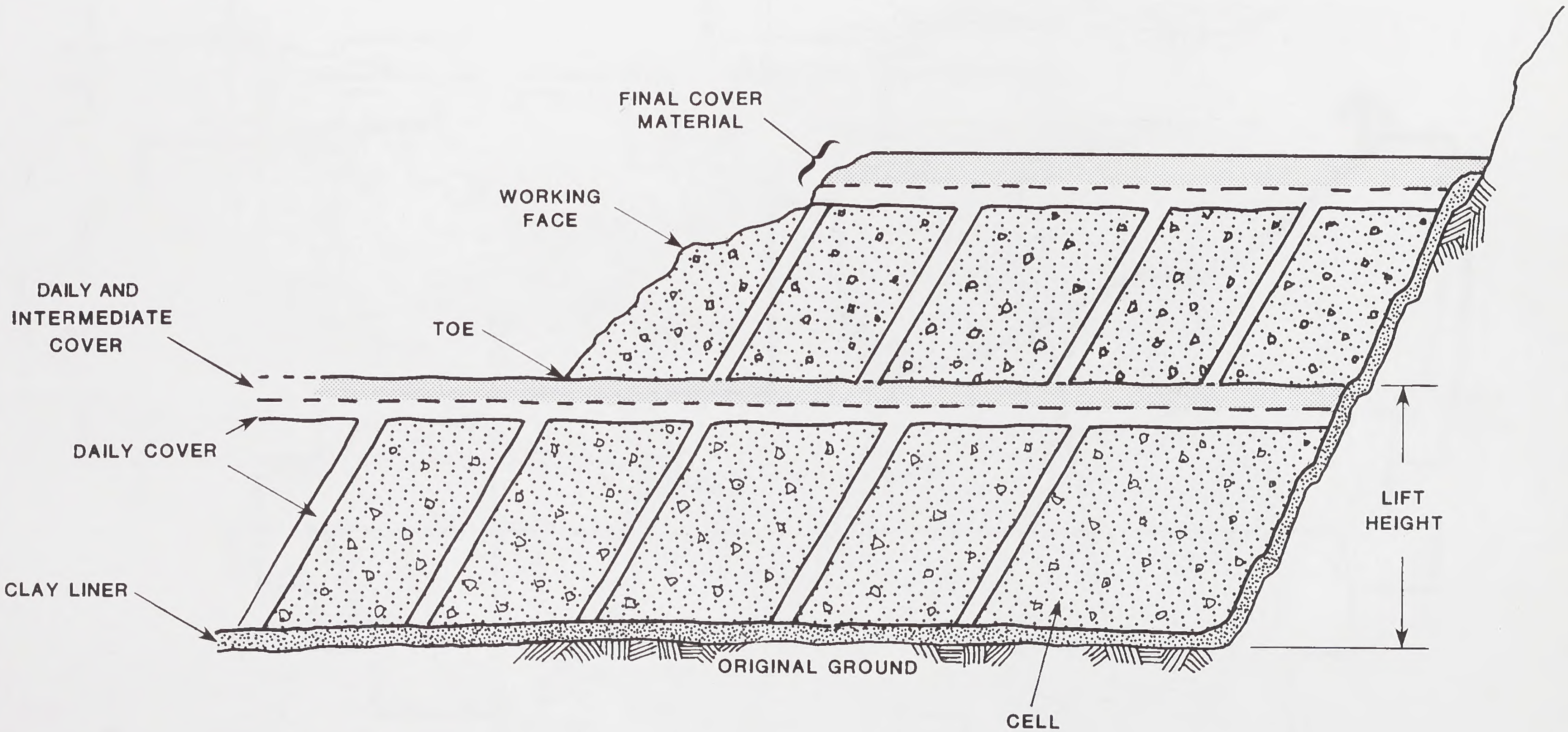


FIGURE 22. SCHEMATIC LANDFILL CROSS SECTION (NOT TO SCALE)

Deposit of Refuse. The container transport trucks would bring closed containers from the container handling yard to the working face of the landfill. The containers to be used are, for the most part, standard rear-loading intermodal containers that will be loaded by compactors and unloaded as described below. Certain existing transfer stations are not configured to utilize containers. In these cases, top-loading trucks will be used. These will be top loaded, but end-dumped in the same manner as the containers. The net weight of the refuse in the top-loaded units will be less, because the degree of compaction possible for end-loaded units cannot be achieved with top-loaded units.

Refuse will be removed from shipping containers using self-dumping vehicles. These consist of trailers designed to carry one or two containers (if two, the containers will be loaded side-by-side). The trailers would be hauled to the working face of the landfill by a tractor unit. At the landfill face, the container platforms on the trailer will be hydraulically elevated to a sufficient angle to allow the refuse to discharge by gravity from the rear of the container. Hydraulic power for the tipping mechanism would be provided from the tractor unit. During full operations, depending on the choice of transport vehicles, between 17 and 34 container handling vehicles would be used on a daily basis, with three or four additional vehicles available on a standby basis.

Refuse from some over-the-road trailers may be removed using a tipper. A tipper is a stationary platform which elevates a refuse trailer so that the refuse is discharged from the rear of the trailer. A semi-truck/trailer drives onto the tipper in the horizontal position. The trailer is uncoupled and fastened securely to the frame of the tipper. The tractor is driven off of the tipper. The tipper is then hydraulically elevated at one end, tipping the trailer to about a 60-degree angle allowing the contents to spill out of the end of the trailer by gravity. When the trailer is empty, the tipper returns to the horizontal position, the tractor is recoupled and the unit returns to the container handling area.

Containers or trailers will be emptied as close to the working face of the landfill as possible. Crawler tractors will push loads from where containers are emptied to the working face, where refuse will be spread to an average depth of two feet. At full operations, six tractors will be required for the project.

After the crawler tractors have spread the refuse, the refuse would be compacted to a density of about 1,000 to 1,250 pounds per cubic yard by diesel-powered landfill compactors. As the final elevation of individual cells is reached, crawler tractors would roll and level the refuse, and the cover would be placed. The compactors planned for use at the project site operate with a 315-horsepower diesel engine and have a width of almost 15 feet. The compactors would compact a minimum 2,000 tons of refuse per 10-hour day. Ten compactors would be in operation when the landfill is operating at maximum inflow.

The working face of the landfill would have a height of about 18 feet. The front of the cell would have a slope of about 6:1 (horizontal to vertical), and the side slopes would be 3:1. Its width and daily length would depend on the type of transport and tipping equipment used and the quantity of refuse received. With the use of self-dumping vehicles, the width of the working face would be 230 feet and the cell would advance about 245 feet per day.

At the end of each day's operation, a minimum thickness of six inches of compacted daily cover material would be placed over the refuse using either crawler tractors or self-propelled scrapers passing directly over the refuse. Three additional crawler tractors would be required and may also be used to doze cover material from stockpiles located near the uncovered refuse.

Previous mining activities generated large quantities of waste material (coarse mine tailing or crushed rock and overburden) on the site which would be used for daily and intermediate cover. Figure 11 of Appendix B shows the spoils area locations. Approximately 2,000 cubic yards of coarse tailing would be used for daily cover and 2,000 cubic yards for daily construction of internal haul roads. It is estimated that 120 million cubic yards of cover will be needed for the entire project.

The coarse tailing pile on the south side of the East Pit contains an estimated volume of 38 million cubic yards. This material can be used directly as daily cover without processing of any kind. Existing piles of overburden will be crushed to a similar size using a portable crusher and front-end loader. Either or both sources of material can be used for daily cover, the choice of which being made based on transportation logistics. Even though much overburden will be covered by refuse, additional sufficient quantities (up to 152 million cubic yards) exist at elevations above the refuse level outside the landfill footprint that can supply the project for its entire life. All of the overburden that would be used is located in Planning Area 1 of the SP. A portable crusher will be placed near the overburden piles used to provide cover and moved, as required, to limit the haul distance to the working face of the landfill.

A pugmill may be used strictly for the blending and conditioning of the fine tailing to be used as the clay liner in the bottom of the landfill.

As filling operations proceed, drainage and elements of the gas collection system would be constructed. These are discussed below and explained more fully in Appendix B, pages 20-30.

Leachate Control, Monitoring, and Treatment

Leachate is liquid that passes through or comes into contact with wastes, or is produced by the decomposition of organic wastes. The physical characteristics of the incoming refuse can have a significant influence on leachate composition and production. Municipal solid waste typically has a moisture content of about 25 percent (SCS Engineers 1990). The refuse coming into the Eagle Mountain landfill will undergo sorting to remove recyclable materials at transfer

stations near refuse sources and will be compacted for placement in shipping containers. No free liquid will be accepted as incoming refuse. Sorting activities will provide an opportunity to remove containers of liquid waste improperly contained in the solid waste stream. Yard waste and other high-moisture wastes may be removed from the refuse as part of governmental composting regulations further reducing the overall moisture content of the refuse. The hot, dry climate of the area will result in evaporation of significant quantities of water from the refuse during and after work at the active face. Compaction and incidental drying of refuse during handling could further reduce the original moisture content.

The leachate control and removal system includes a foundation layer, the liner, a blanket drainage layer, leachate collection sump, storage and treatment facilities, and groundwater monitoring wells. The design, size, and capacity of the leachate control and removal system including ancillary pumps, storage tanks, and piping will be approved by the appropriate approval agencies.

The Liner. California Code of Regulations, Title 23, Division 3, Chapter 15, regulations state that new Class III landfills shall be sited where soil characteristics, distance from waste to groundwater, and other factors will ensure that no impairment of beneficial uses of surface or groundwater occur beneath or adjacent to the landfill. Although factors such as annual precipitation, background quality of groundwater, and current and anticipated use of groundwater indicate that there will be no impairment of beneficial uses of groundwater, the entire area underlying refuse will be lined.

A preliminary determination by the Riverside County Solid Waste Division would require that MRC construct a composite liner consisting of clay and a high density polyethylene (HDPE) flexible membrane over certain portions of the landfill. The area likely to require the composite liner would be the lowest elevations of the landfill; that is, those areas in which leachate is most likely to accumulate. All other areas underlying refuse (floor and side slopes) would be lined with a clay liner. Both the composite liner and the clay liner would use the reserve of low-permeability fine tailing from previous ore mining operations at the site.

When compacted to 90 percent of maximum density, the tailing material displays laboratory permeabilities ranging from a minimum of 1.0×10^{-8} centimeters per second (cm/sec) to a maximum of 8.8×10^{-6} cm/sec. Quality control testing will be performed during liner placement to ensure that only material with permeability below 1×10^{-6} cm/sec is used for liner composition in accordance with Chapter 15 regulations. Other physical properties of the tailing material are consistent with its use as a landfill liner, and no hazardous concentrations of metals or other substances have been found to be contained in the material (Hanson 1990; SCS Engineers 1988a, 1989a).

Groundwater Monitoring Wells. To provide ongoing groundwater monitoring during landfill operations and following landfill closure, a number (to be determined by the RWQCB)

of groundwater/monitoring wells will be installed. These wells will be designed to detect movement of pollutants from the area of the landfill in groundwater. For this purpose, wells are generally placed downgradient close to the margin of the landfill. Water quality at these points of compliance is compared with background water quality.

California Code of Regulations, Title 23, Division 3, Chapter 15, specifies that a sufficient number of wells should be installed to monitor background water quality and water quality at points of compliance. The wells must be logged by a geologist and must be able to accurately monitor water level and chemical indicator parameters. Prior to installation of the groundwater monitoring system, approval of the proposed program will be obtained from the RWQCB.

Construction methods and details of the groundwater monitoring wells will depend on whether they are placed in alluvium or in bedrock. Alluvial wells will be drilled using air or mud rotary methods. The bedrock wells will be drilled using air rotary methods in conjunction with a downhole percussive tool. Samples will be collected during drilling to provide information on lithology. A log of each well will be prepared by an on-site geologist working under the direct supervision of a geologist registered in the state of California. The well log will include information on well location, driller, drilling equipment, borehole diameter, depth, dates, and times that various operations were performed, and geological observations.

The wells will be sampled and analyses regularly performed as specified by the RWQCB in its waste discharge requirements. It is anticipated that laboratory analyses will consist of a number of tests selected from among the ones being performed for background groundwater monitoring (described in the subsection on background groundwater quality monitoring).

Leachate Collection. Preliminary studies using the HELP model (U.S. Environmental Protection Agency n.d.) and the Thornthwaite method (Thornthwaite and Mather 1957) indicate that little or no leachate will develop over the life of the landfill. Therefore, the leachate collection system will be designed based on minimum engineering requirements. Leachate collection will commence as soon as the project begins during Phase I and continue for the life of the project and after. The topography of the site will require two different types of leachate collection. Details of the leachate control system are shown in Figures 23 and 24.

The East Pit area will require pumping if any leachate is formed there (Figure 25). The pit area of the landfill will be pumped out as necessary and any leachate will be deposited in the main header and collected east of the landfill. The pump will be portable and used only if leachate develops in the pit.

The west and northeast portions of the landfill site may be suitable for gravity flow (Figure 26). A series of gravity drains will be formed in the low areas, above the liner, to collect any leachate that might form in the landfill. The gravity collection system will consist of collector pipes

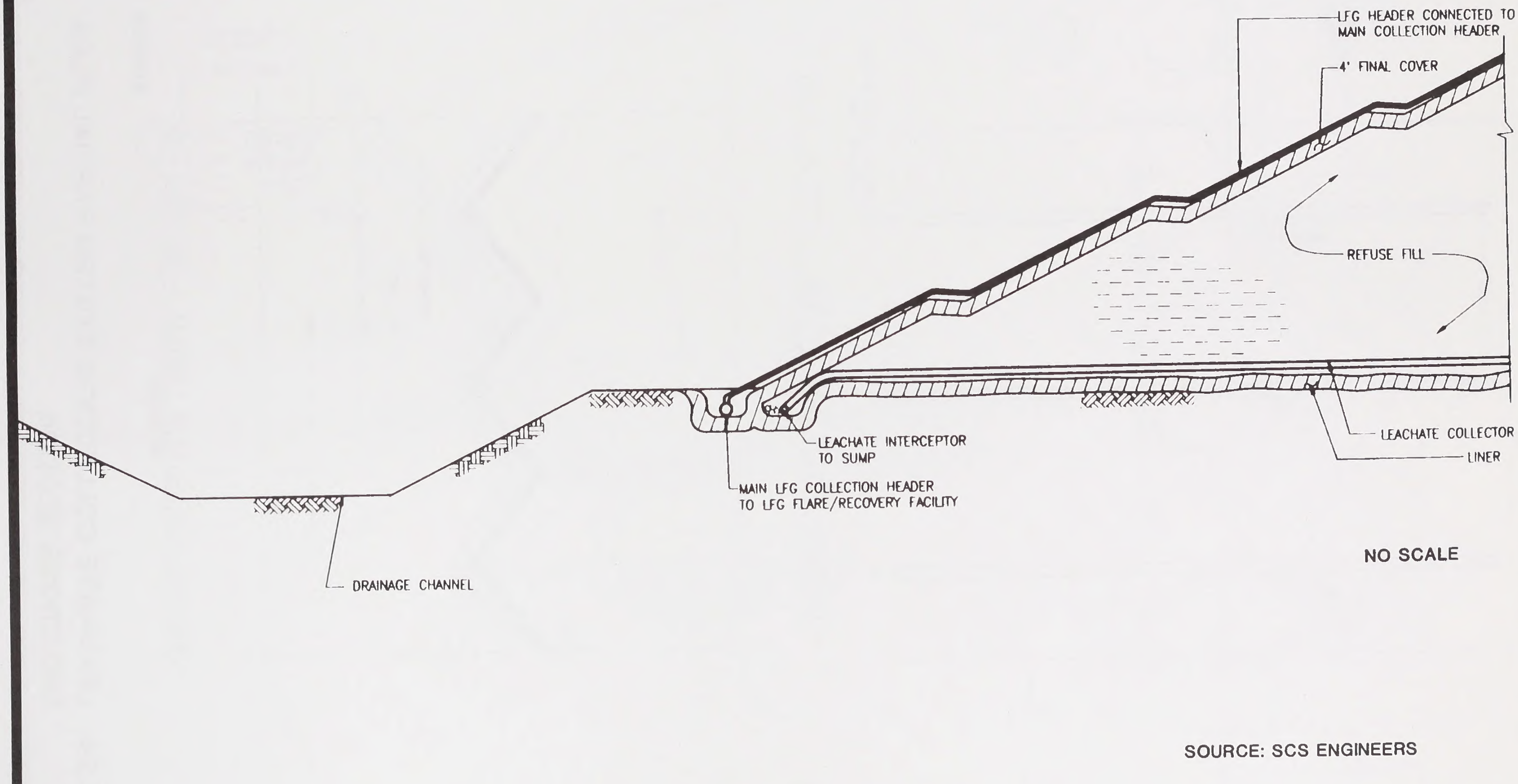
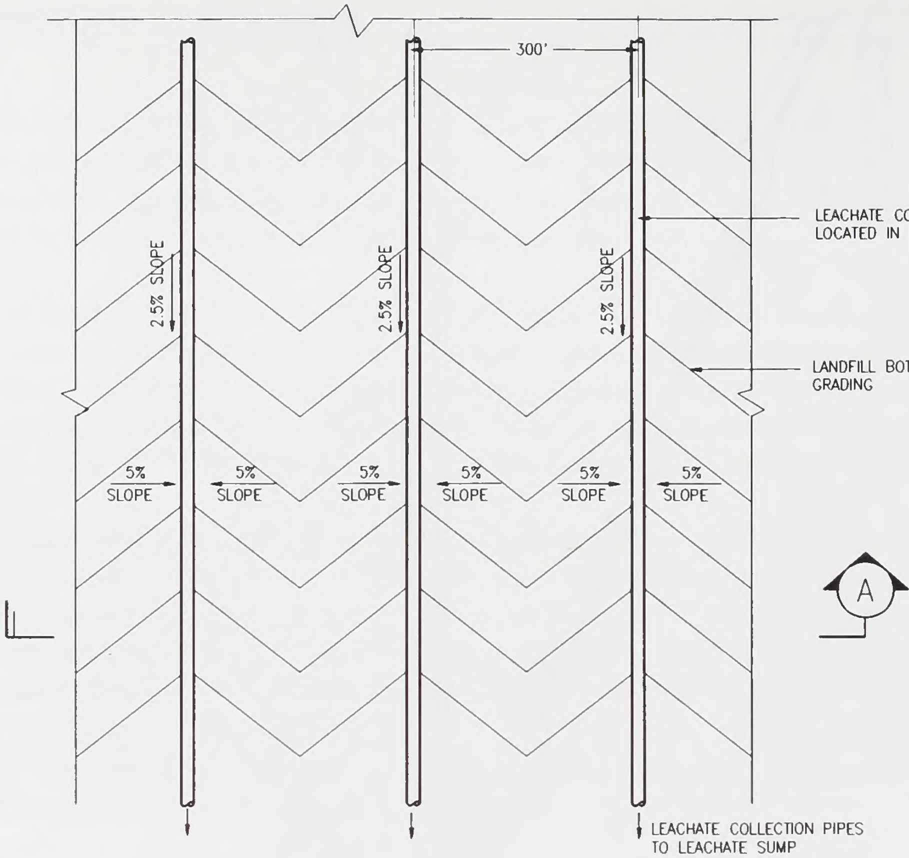
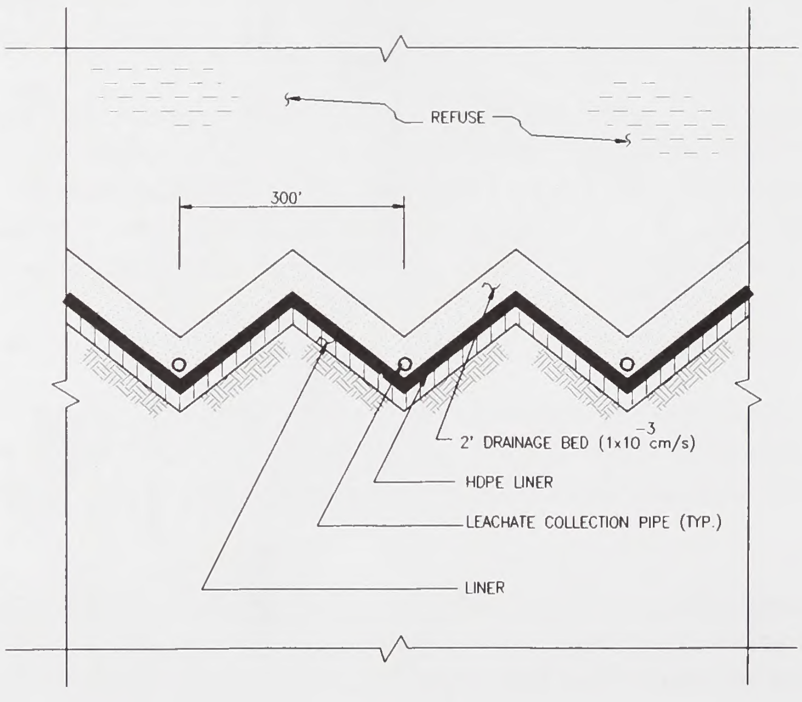


FIGURE 23. LEACHATE COLLECTION SYSTEM DETAILS



LEACHATE COLLECTION SYSTEM – PARTIAL PLAN
NOT TO SCALE



LEACHATE COLLECTION SYSTEM – SECTION A
NOT TO SCALE

SOURCE: SCS ENGINEERS

FIGURE 24. LEACHATE COLLECTION SYSTEM PARTIAL PLAN AND CROSS SECTION

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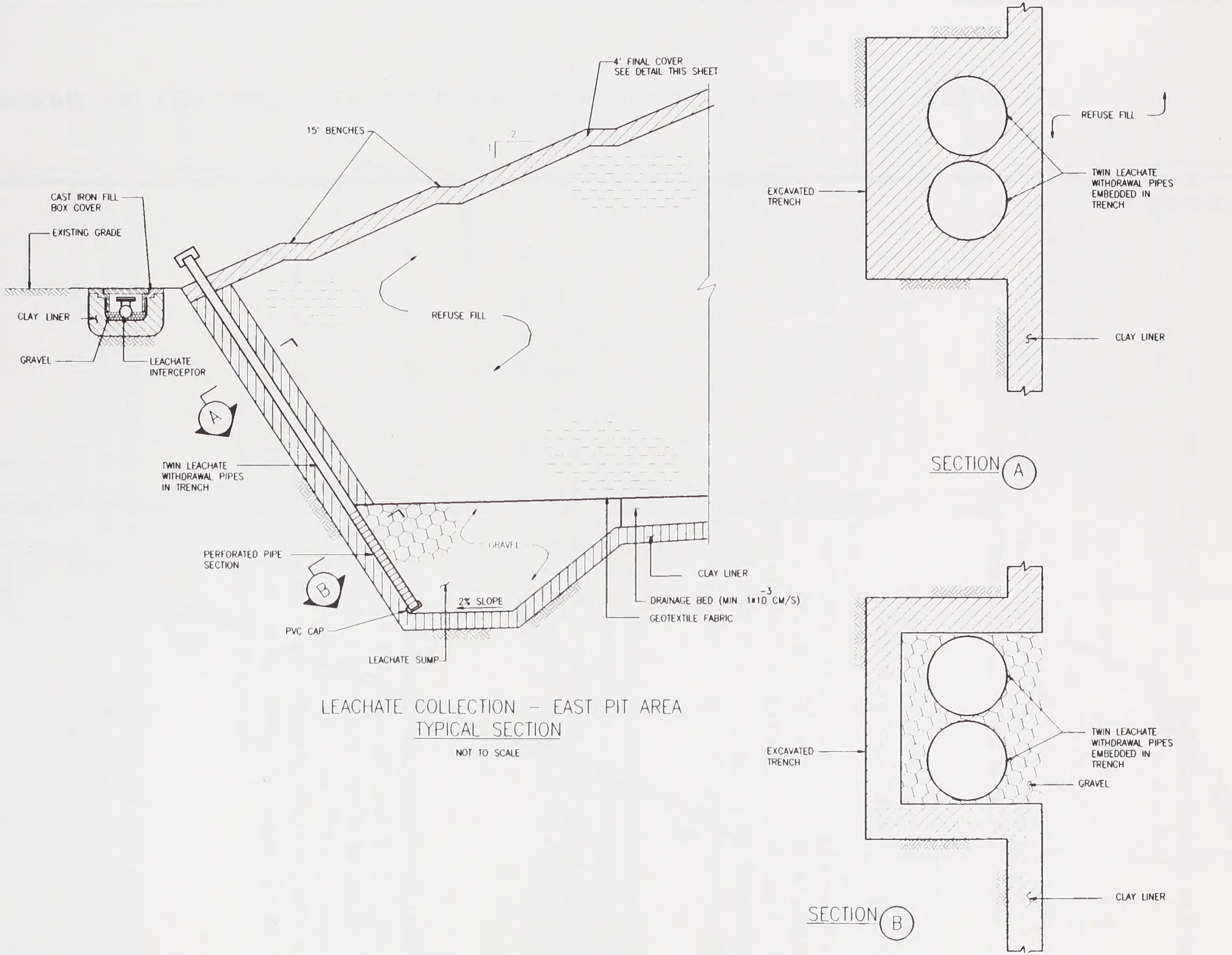

SOURCE: SCS ENGINEERS

FIGURE 25. LEACHATE COLLECTION SYSTEM IN EAST PIT AREA

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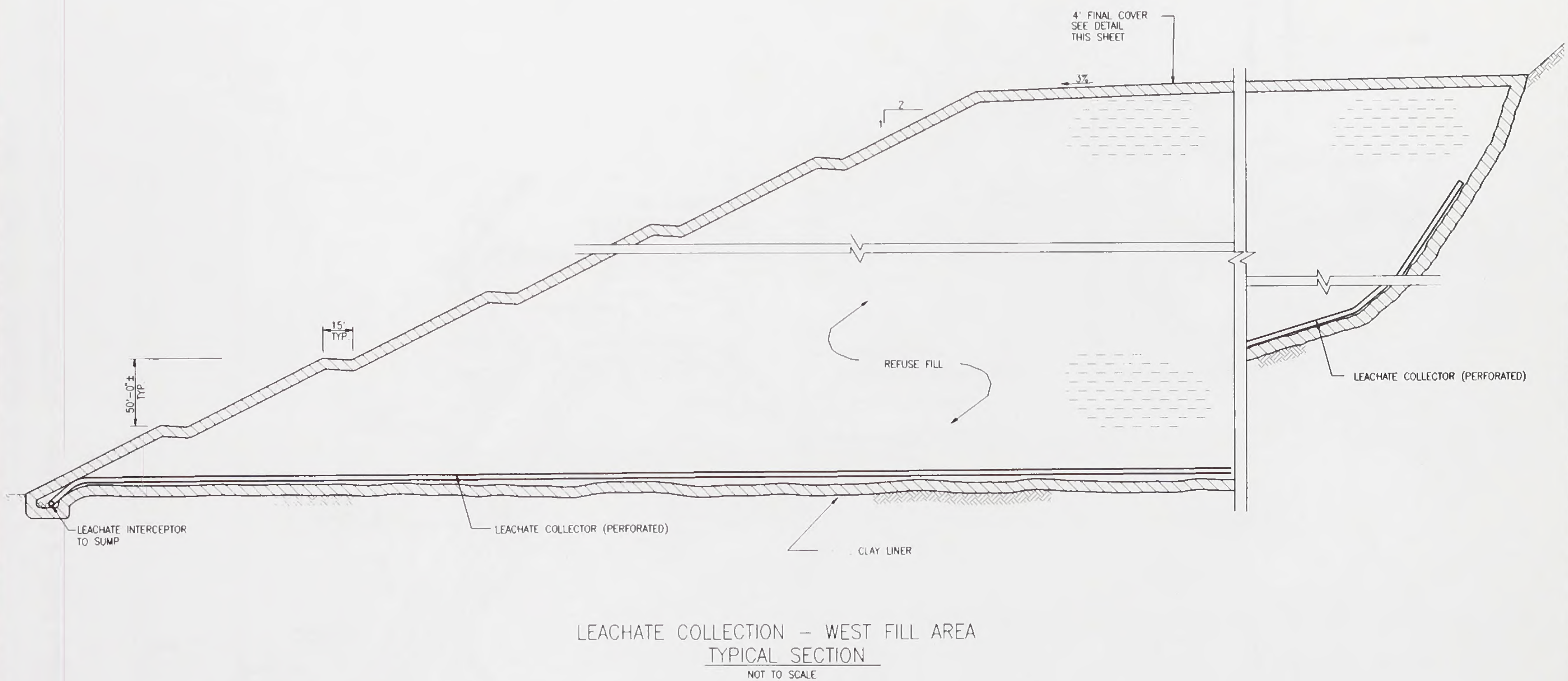

SOURCE: SCS ENGINEERS

FIGURE 26. LEACHATE COLLECTION SYSTEM DETAILS IN WEST FILL AREA

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located in the landfill and header pipes located at the edge of the landfill draining to a main collection point east of the landfill. If required, leachate pumps will be installed.

Leachate Treatment. If within parameters that make the leachate nonhazardous, it may be used on unpaved roads for dust control or placed in open-topped containers to evaporate. Alternatively, it will be delivered by truck to the existing sewage treatment plant for disposal. If the treatment does not render the effluent nonhazardous, it will be stored on-site in an approved manner as a hazardous waste and periodically disposed of in accordance with applicable regulations.

If there are noticeable floating organics (oil) on the leachate, it will be passed through a commercial oil skimmer for the removal of the offending compounds. Recovered organics will be collected and stored as hazardous waste and disposed of in accordance with applicable regulations at a licensed facility. If high BOD is measured, the leachate will be passed through an aerator to oxygenate the water. This will lower the BOD. These "pretreatment" facilities will be either permanent or portable, the selection of which will be based on the location of the leachate collection, the quantity of leachate, and other factors. Details of the pretreatment facilities will be determined during the permitting process. Ultimately, permanent facilities will be used.

The existing wastewater treatment plant formerly serviced the town of Eagle Mountain and the industrial complex at the mine site. It is presently in operation at a reduced capacity. The design capacity is 180,000 gallons per day, although its permitted discharge by the Lower Colorado River RWQCB is 40,000 gallons per day. Leachate production is expected to be extremely low, and the treatment plant capacity adequate.

Project Sequencing

Neither refuse nor the liner will be placed at a level at or below the highest historically known groundwater level. The lowest point in the present East Pit excavation is at an elevation of approximately 705 feet above MSL. The projected sequencing plan for the landfill avoids disposal in the deepest part of the East Pit for approximately 85 years. Prior to initiating operations in this part of the pit, the bottom of the pit will be raised by filling this area with overburden material to an elevation at least 50 feet higher than the highest historically known groundwater level or to an elevation approved by permitting agencies.

Drainage

Temporary and permanent drainage facilities would be constructed to divert storm water flows around and away from the refuse fill, to collect and remove any storm water that falls on the refuse fill, to control off-site flow of waterborne debris, and to minimize erosion (Figure 27).

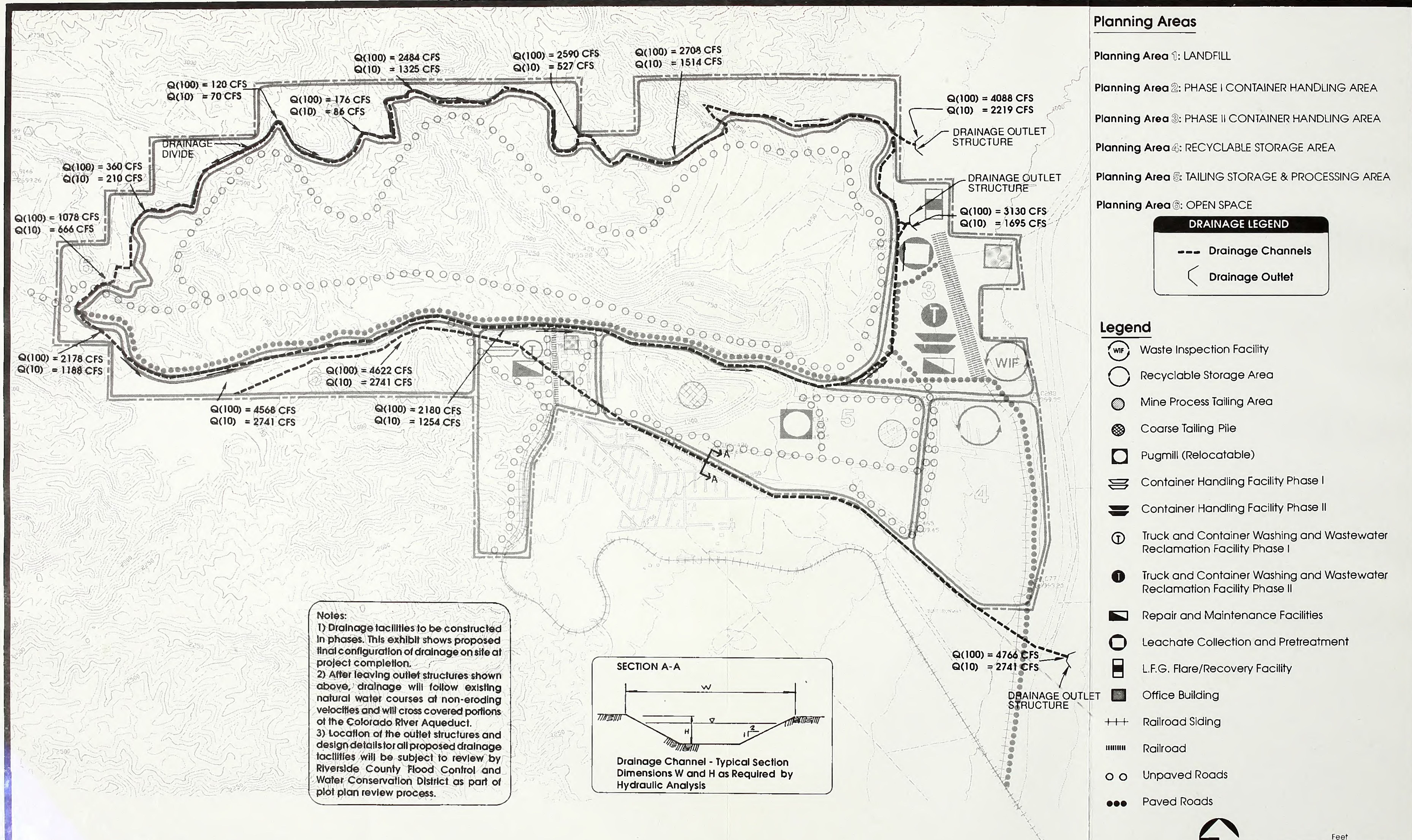


FIGURE 27. DRAINAGE PLAN

SOURCE: THE PRA GROUP, INC., 1991

Temporary drainage flows will also be diverted so as not to impact the Colorado River Aqueduct.

The proposed landfill would be designed to meet all relevant regulations. The state (Title 14 of the CCR) and federal (Resource Conservation and Recovery Act, Subtitle D, the "open dump" criteria) regulations require that the landfill be protected from flooding or washout from a 100-year, 24-hour duration storm. Further, Title 23, CCR, Chapter 15, regulations require a minimum final slope to facilitate drainage and hence minimize infiltration of water into the landfill and subsequent potential degradation of groundwater quality.

As the site filling progresses, interim drainage control measures shall be utilized to prevent runoff from reaching areas of waste deposition or active fill areas. This drainage would be directed around the landfill for discharge to the alluvial areas to the east. From all discharge locations, runoff will proceed via sheet flow over covered portions of the Colorado River Aqueduct. Temporary drainage structures will be constructed around initial fill areas to prevent storm runoff from entering the active area of the landfill. The drainage will be routed around the active area and in some cases may flow into the east end of the East Pit, where it will be allowed to evaporate. Temporary drainage will be conveyed to the East Pit in order to intercept runoff from final drainage structures which has not been already intercepted, and keep it from entering initial fill areas. Landfill activities will not be undertaken in this area for approximately 85 years. If runoff comes in contact with refuse, it will be considered leachate and pumped from the pit to the wastewater pretreatment facility on the site where it will be treated. These interim measures shall be incorporated into the site operational plan and subject to review by the regulatory oversight via the state's periodic review process. The final landfill slope shall meet the Chapter 15 minimum of three percent.

Elements of the system to be constructed initially include a drainage system for the container handling area and permanent drains near the eastern extent of the refuse disposal area, as well as a series of downdrains. The interim drainage system will consist of a series of intersecting channels and settling/detention basins. These features will be replaced as the refuse operations continue to final elevations.

Upstream drainage would be conveyed past the landfill and town areas where it can be safely discharged into the natural flow paths downstream. The drainage plan would provide two landfill perimeter drains and an improved system through the town. The southern toe of the landfill is designed outside of and above the 100-year floodplain limits. The northern perimeter drain would collect flows from the landfill surface and northern canyons tributary to the landfill toe. The southern perimeter drain would collect flows from the landfill surface only. Both landfill drains would discharge east of the site at noneroding velocities.

Upon completion of the landfill, the northern perimeter drain would be approximately 16,500 feet long, and the southern perimeter drain would be approximately 18,500 feet long. The

drain channel bottom width would be 20 feet and the top width would vary from 26 to 40 feet (see inset on Figure 27). The depth of flow in the channel would range from less than one foot to approximately four feet. Both drain channels would be sized to contain runoff from a 100-year rainfall frequency event, plus a two-foot freeboard allowance (see the drainage section and Appendix B of this draft EIS/EIR for more details).

Storm water that falls directly on areas which have been filled with covered refuse, that is, unpolluted surface flows, will be collected in a series of surface drains and conveyed to one of the storm water drainage systems described above. Storm water which comes into contact with refuse will be considered leachate and will be collected, pumped, and transported to the leachate/wastewater pretreatment plant.

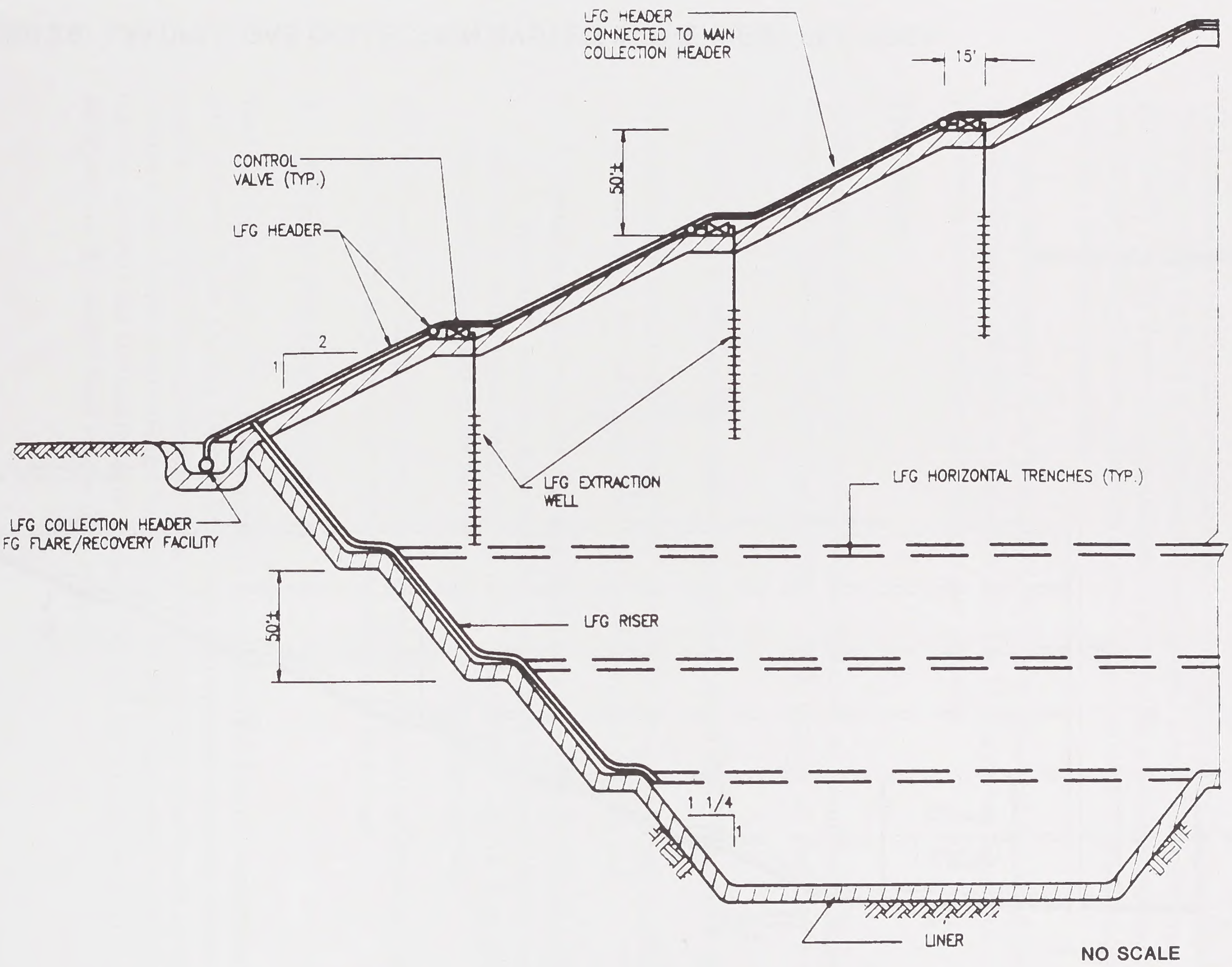
Runoff from the container handling yard will be contained by berming this area. Flows will be conveyed through a gravity interceptor to natural watercourses east of the project site. Gravity flow through the interceptor will remove floating grease and oil and solids from the runoff.

Gas Control

The landfill gas emission and migration control system will consist of a grid of horizontal collection pipes laid in trenches in the refuse and/or vertical extraction wells. The horizontal collection system would be installed as cells were constructed and final elevations achieved, while vertical extraction wells are constructed on the benches and the highest elevations of the landfill to control LFG emissions. The vertical and horizontal extraction wells will be connected to headers (i.e., collection pipes), which in turn will be connected to the LFG emission control/utilization system.

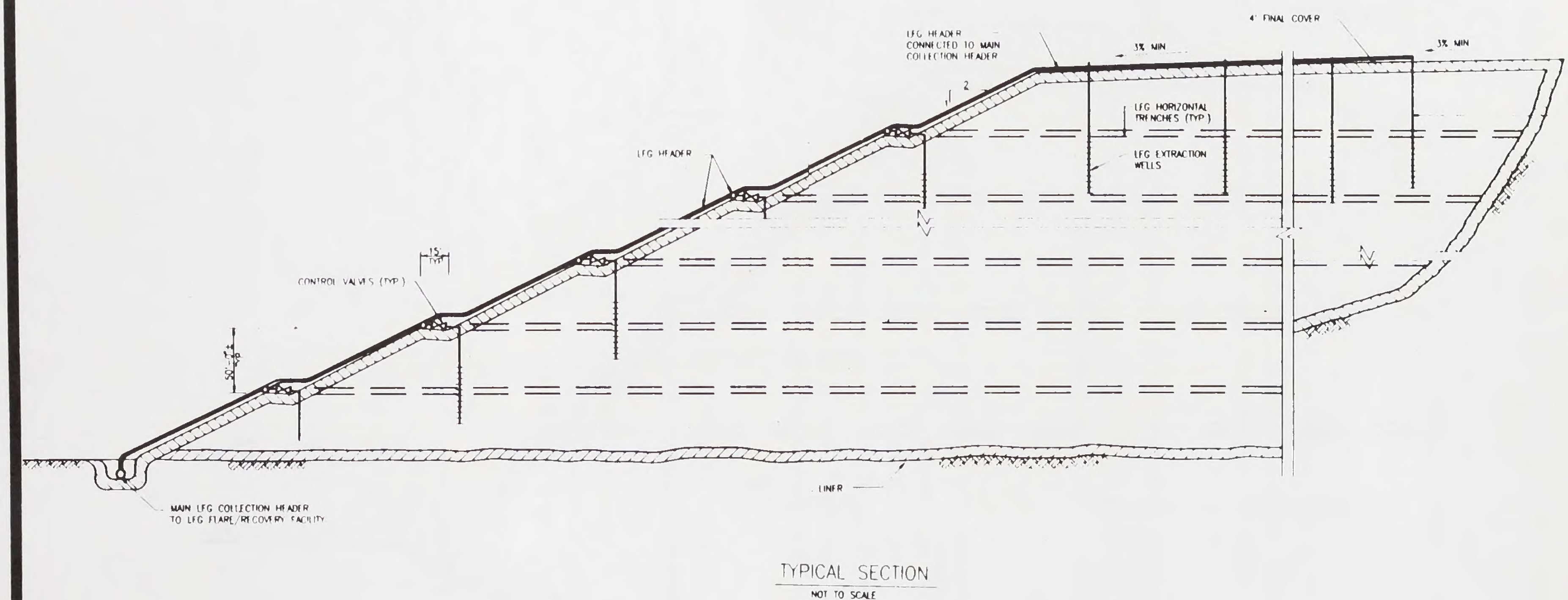
Initially, LFG would be incinerated in a thermal combustor consistent with state requirements and South Coast Air Quality Management District (SCAQMD) regulations. A supplemental fuel-fired burner may be used when the methane content of the LFG is too low to utilize the thermal combustor system. When emissions reach 80 percent of the threshold value of New Source Review, or sooner if economically viable, the thermal combustors would be replaced with an energy recovery system providing emission control and an alternate energy source.

Construction of the thermal combustor station would begin within one or two years following the start of landfilling operations. The proposed final combustor/energy recovery facility is located in Planning Area 3 shown on Figure 16. Temporary units may be utilized near the source of the LFG in Planning Area 1. Design specifications of the flares (stack height, diameter) have not been determined by the applicant. In accordance with current SCAQMD guidelines, the flares are expected to operate at a minimum temperature of 1,400 degrees F and a residence time of 0.3 second. Figures 28 and 29 show a typical sectional view of the LFG emission and migration control system in the east pit area and the west fill area. The LFG control system will also consist of a series of gas migration probes placed around the perimeter



SOURCE: SCS ENGINEERS,

FIGURE 28. LANDFILL GAS COLLECTION SYSTEM IN THE EAST PIT AREA



SOURCE: SCS ENGINEERS,

FIGURE 29. LANDFILL GAS COLLECTION SYSTEM IN THE WEST FILL AREA

of the site to detect any off-site gas migration. Probe spacing and depth will conform with SCAQMD and CIWMB guidelines.

LFG condensate will be collected in traps placed at low points along the gas collection system. The traps will be enclosed in double-walled underground tanks. Truck-mounted pumps will periodically remove the condensate and carry it either to the wastewater pretreatment facility or to storage pending disposal off-site at a licensed hazardous waste disposal facility depending upon the condensate composition.

Assuming that 80 percent of the generated LFG can be recovered for energy purposes, gas recovery operations will likely be initiated within 8 to 17 years when the amount recovered is predicted to exceed 10 million cubic feet per day (mmcfd).

Final Cover

As final grades are reached in the landfill areas, a final cover with a minimum thickness of four feet would be emplaced. As specified in Title 23, CCR, Chapter 15, the cover would consist of:

1) A two-foot foundation layer applied over the last cells of refuse disposed in the landfill,

2) A minimum one-foot-thick barrier layer with an effective permeability of at least 1×10^{-6} centimeters per second, compacted to 90 percent relative density, and

3) A vegetative layer of one foot minimum thickness as specified by Title 23, CCR, Chapter 15. A "vegetative" layer is a layer of earth amended with compost or humus and fertilizers such that it will support vegetative growth. The purpose of this is to allow natural vegetation to take hold on the landfill cover to provide erosion control.

The upper surface of the landfill would have a minimum 3 percent gradient to provide adequate drainage and limit the potential for ponding and erosion on its surface.

d. Closure and Post-Closure

The California Integrated Waste Management Board, Riverside County Department of Health, and Regional Water Quality Control Board have requirements regarding closure and maintenance of landfills. The closure plan would include continuing groundwater monitoring, gas collection and control, and continued landscaping and other maintenance work. The financial capacity to certify the availability of funds for monitoring and maintenance for 30 years after the closure of the landfill must also be demonstrated.

The currently determined post-closure use of the site would be to return the site to a natural desert condition. Settlement and the presence of gas collection facilities limit the types of uses that can be developed after closure. Post-closure uses of the landfill site will be compatible with adjoining uses (e.g., Joshua Tree National Monument).

B. Reduced Landfill Operations Alternative

Within the general scope of the proposed project, a variety of different configurations for the landfill are possible. Besides the particular phasing and ultimate configuration that is proposed, a project scope which provides for a reduced level of operations and configuration of landfill contours is considered in this document.

The reduced operations alternative would allow for the disposal of up to 16,000 tpd, including up to 14,000 tpd by rail and up to 2,000 tpd by truck. Truck traffic is included in this alternative to enable the project to serve potential future demand in Riverside County which cannot be served economically by rail transportation. This alternative would have the effect of reducing the total capacity of the landfill by approximately 20 percent compared with the proposed action. However, at an inflow of 16,000 tpd, the potential 115-year site life of the project would not be reduced under this alternative.

The landfill footprint would be reduced to include only the area shown in Sequence III of the project (see Figure 20). In reducing the area of the landfill footprint, development would not occur in portions of the East Pit which contain mineral resources or water. The final elevations of this alternative would be slightly less than with the proposed action. The maximum elevation of this alternative is 2,200 feet MSL.

The alternative is consistent with the proposed action's phasing plan as related to the construction of drainage, leachate, landfill gas, liner, haul roads, and other aspects of the proposed landfill design.

The landfill operations would be similar to those described in the proposed action. The waste would be initially received at transfer stations in the counties of Los Angeles, San Bernardino, Orange, and Riverside. After sorting and compaction it would be shipped via rail and truck to the landfill site where it would be deposited. Potential leachate production would be controlled, monitored, and treated. Groundwater would be monitored. Drainage around the landfill would be provided. Landfill gas would be collected and controlled. This proposed alternative would observe all of the appropriate requirements of a Class III landfill, including closure and post-closure. Mining exploration, mining, and related ore processing would be much less affected with this alternative.

C. Proposed Action with Rail Access Only Alternative

This alternative would reduce the daily capacity of the project to 16,000 tons, all of which would be delivered by rail. This alternative would eliminate the use of refuse hauling trucks to the proposed site; however, all other landfill activities described in the proposed action would remain the same. While this alternative may be technically and economically feasible, it precludes transporting waste from nearby sources in Riverside County. Serving Riverside County is an important condition of locating the project in Riverside County. In addition, this alternative would reduce the project's operational flexibility.

D. No Action Alternative

This alternative would leave the Eagle Mountain site in its present condition and no landfill would occur. The caretaker status of the former mining operations would be maintained, at least temporarily. The existing mining reclamation plan (Kaiser Steel Corporation 1978) may be implemented. The East Pit and surrounding piles of overburden rock and mine tailing would remain, with minor drainage and other improvements to stabilize their surfaces and allow natural revegetation to occur. The land surrounding the former mining operations would continue to be highly disturbed. The economic benefits to the county and the Desert Center economy resulting from the landfill operations would not occur.

Under the No Action alternative, the BLM/Kaiser land exchange could still occur in the future, although that is highly unlikely without the proposed landfill operations. The railroad right-of-way grant would not be necessary under this alternative.

Metropolitan southern California communities would continue to rely on existing, expanded, or new landfills under the No Action alternative. Even with state-mandated solid waste reduction goals, the existing capacity in most landfills is limited to a decade or less (SCAG 1988).

E. Features Common to All On-Site Alternatives

The on-site alternatives may be divided into two groups. Three alternatives involve filling the Eagle Mountain iron ore open pit mine with municipal solid waste and one proposes not to fill the mine with solid waste. For all of the alternatives involving landfilling at Eagle Mountain (the proposed action, reduced landfill operations alternative, and proposed action with rail access only alternative), many operations and features would be identical. These include the operation of the container handling yard, transport of containers to the working face of the landfill, deposition and compaction, leachate and gas control systems, final cover, and closure activities. In addition, the discretionary actions necessary for these alternatives would be

identical or quite similar. Except as noted in their descriptions, the overall impacts of these alternatives would be very similar. All of these alternatives would depend on the future establishment of processing and transfer stations elsewhere in the metropolitan southern California communities which would sort solid waste to remove unacceptable material and recyclable material. These processing and transfer stations would require their own local and state discretionary approvals and accompanying environmental review.

F. Summary of Environmental Impacts–Comparison of On-Site Alternatives

Table S-2 presents an overall summary of the relative effects of the various on- site alternatives when compared with the proposed action. Because the precise effects would depend on details of each alternative and the extent to which environmental mitigation measures could be incorporated into each alternative, this comparison is approximate. The overall comparison may be summarized as follows:

1. Reduced Landfill Operations Alternative

This alternative reduces the maximum tonnage per day of waste brought to the landfill by 20 percent. It also reduces the size of the final footprint of the landfill and the final elevation of the landfill. As a result, incremental reductions in nearly all of the potential impacts resulting from the proposed action would be realized. However, air quality impacts, though reduced, would still remain significant and not fully mitigated. The disadvantages of this alternative do not relate to impacts within the project site and are, therefore, not reflected in the comparison table.

2. Proposed Action with Rail Access Only Alternative

This alternative would result in impacts generally identical with the proposed action. Those impacts related directly to truck operations—air emissions, potential conflict with other vehicle traffic, and noise—would be eliminated. The ability to respond to rail accidents by shifting delivery mode to trucks might be slightly impaired under this alternative.

3. No Action Alternative

With respect to potential environmental impacts in the project site and immediate vicinity, the No Action alternative may be better in nearly all respects than the proposed action. Depending on the continuance of uses within the Eagle Mountain community, the potential land use and economic impacts of this alternative may be adverse. Because of the existing contrast between the lighter-colored cut slopes and overburden piles around the East Pit when viewed against

the darker ridgelines forming their backdrop, this alternative would leave the noticeable visual impacts caused by the mining for an indefinite amount of time.

A major disadvantage of this alternative relates to impacts of landfills elsewhere and is not reflected in the table.

G. Analysis of Alternative Sites

1. Introduction

The above project alternatives are assessed throughout this document to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). CEQA also requires an analysis of alternative sites in situations where requiring such an analysis is reasonable. Numerous alternative sites are evaluated below to meet this CEQA requirement.

The proposed action would ultimately involve the transportation of waste processed through material recovery facilities in urban areas to a remote desert site. This section of the report compares the impact profile of the proposed action with impacts associated with other potential rail haul projects which would require the same type of network of centrally located MRFs from which to transport waste by rail to remote project sites.

The demand served by the proposed action could also be satisfied if the waste is disposed of in facilities and counties where it is generated. Therefore, this section also compares the project impacts with proposed landfill projects in counties where the waste would be generated.

2. Alternative Site Analysis

a. Remote Rail Haul Projects

Remote Desert Site Rail Haul Projects

In 1988, the Southern California Association of Governments prepared a feasibility study and a general environmental assessment of transporting waste by rail to nine remote desert sites, including Eagle Mountain. The general locations of these projects are shown in Figure 30 and are listed below:

1) The Morongo Indian Reservation in Riverside County, 91 miles from downtown Los Angeles.

2) The City of Blythe, approximately 230 miles from downtown Los Angeles.

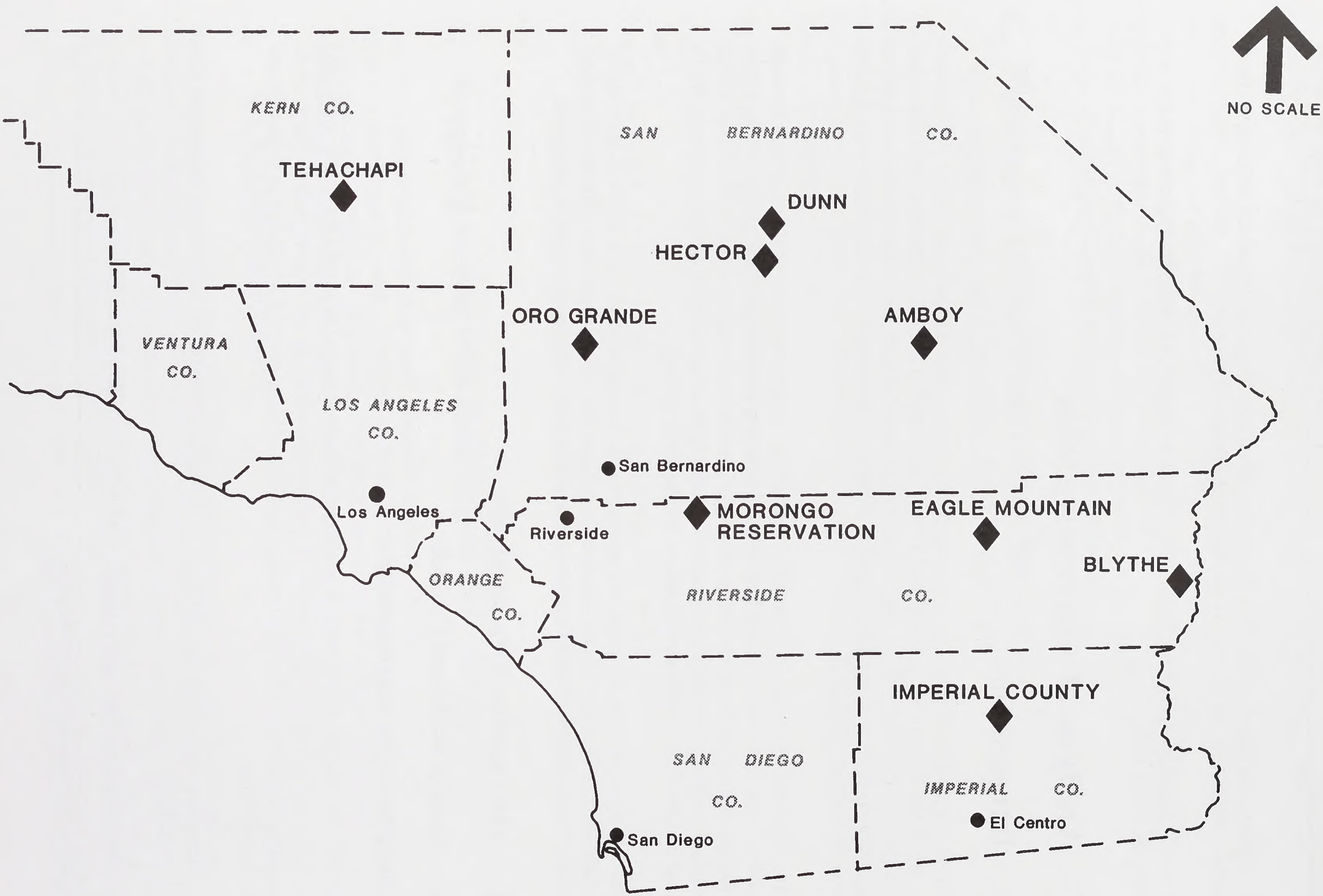


FIGURE 30. ALTERNATIVE DESERT DISPOSAL SITES

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3) Niland in Imperial County, 197 miles from downtown Los Angeles.

4) A solid waste gasification plant proposed in Oro Grande, in San Bernardino County, 113 miles from downtown Los Angeles.

5) An alternative gasification project proposed at Dunn, also in San Bernardino County, 184 miles from downtown Los Angeles.

6) A disposal site 10 miles north of Hector in San Bernardino County, 186 miles from downtown Los Angeles.

7) A site near Amboy in San Bernardino County, approximately 220 miles from downtown Los Angeles.

8) A site near Tehachapi in Kern County, approximately 122 miles from downtown Los Angeles.

Although private parties have expressed an interest in developing all of the above, permit applications have only been filed for two projects. An application was filed in 1989 known as the Hidden Valley site to develop the site north of Hector as a hazardous waste residuals repository. However, the Eagle Mountain project involves Class III nonhazardous solid waste, not hazardous waste; thus, the Hector site is not comparable. An application for a Conditional Use Permit and General Plan Amendment were filed for the Amboy Class III landfill project in August, 1990. Project descriptions are not available for the other projects. For some of these projects, specific sites have not even been identified. In addition, combustion technologies and operating parameters have not been defined for the gasification projects. A discussion of the alternative follows under Section G.2.a.

Generically, all of the above projects would involve waste processing through a system of processing and transfer stations/materials recovery facilities similar to those to be used in conjunction with the Eagle Mountain project. Landfills located in the above locations would be subject to regulatory requirements similar to those of the Eagle Mountain project. Accordingly, a number of impacts from landfill operations would be similar at each site:

1) Public safety impacts related to the potential for hazardous materials in the waste stream, vectors, landfill fires, accidents, and worker safety would be essentially the same as those anticipated for the project. The same types of mitigation measures would also be appropriate.

2) Stationary source emissions from landfill gas combustors and energy recovery facilities would be of the same order of magnitude and significance as for the Eagle Mountain

project. These impacts would occur outside of the South Coast Air Basin. Similar, if not identical, regulatory controls would apply to these projects.

3) Dust and air emissions from landfill equipment would be the same order of magnitude and subject to the same types of mitigation measures as the project.

4) In remote areas, these projects would generate comparable levels of new population and employment.

Vehicular impacts (i.e., mobile air emissions, noise and energy consumption for trains and trucks) would vary in terms of distance between these sites and the areas where waste is generated, the proximity of residential areas to rail rights-of-way, and the volume of traffic at nonseparated grade crossings. In terms of these indices, the SCAG report indicates the following:

1) Because of distance, the development of projects at Blythe and Eagle Mountain ranks highest in terms of fuel consumption and air emissions from waste transport.

2) From downtown or east Los Angeles, rail transport to Niland and Eagle Mountain would result in the greatest number of hours of vehicle delays at nonseparated grade crossings. From the city of Industry, vehicular delay is much greater for transport to Tehachapi than for transport to any other site. From Irwindale, projects in Tehachapi, Oro Grande, Blythe, and Amboy would result in the greatest vehicular delay.

3) From downtown Los Angeles, the greatest population exposure (estimated population within 1,000 feet of rail lines) would occur in conjunction with projects in Tehachapi, Niland, and Eagle Mountain. From the city of Industry, the greatest exposure would occur with sites in Tehachapi, Dunn, and Hector. From Irwindale, the greatest exposure would occur with the sites at Tehachapi, Niland, and Eagle Mountain. Potential noise and vibration impacts would vary in terms of population exposure; these impacts are not considered significant as related to the Eagle Mountain project.

Air emissions from rail transport and the lack of feasible mitigation measures are the major reasons that air quality is considered a significant adverse impact of the proposed action. Based on the analyses contained in the air quality technical report, all of the project alternatives—including continued use of in-basin landfills at existing, expanded, and new locations—are considered to have a significant effect on air quality. The alternative of continued use of in-basin landfills would have the lowest air quality impacts overall, due to the fact that the transportation distances are shortest. However, in-basin solid waste decomposition emissions may be substantially higher than for disposal in arid out-of-basin locations, including Eagle Mountain. The remote siting alternatives would result in air quality benefits in the South Coast Air Basin for ozone, carbon monoxide, and particulate matter, at the expense of increased

impacts in desert areas. The improvements in South Coast Air Basin would pass through to the desert areas over the San Gorgonio Pass; however, these benefits would not be sufficient to outweigh the direct adverse impacts in the desert.

Differences among these projects are likely to occur in terms of site-specific factors such as groundwater, biological and cultural resources, soils and geology, and the availability of public services and utilities. Without a clear identification of project boundaries, it is not possible to provide a meaningful evaluation of these impacts compared with those related to the Eagle Mountain project.

Amboy (Bolo Station Landfill) Railcycle Project

Permit applications for a Conditional Use Permit and General Plan Amendment were filed for this project in August, 1990, and a revised application in September, 1990. San Bernardino County issued a CEQA Initial Study for the project on December 27, 1990. The project will establish an intermodal rail unloading facility and a Class III nonhazardous solid waste landfill on a 4,800-acre site directly adjacent to the Bristol Dry Lake (Figures 31 and 32) and approximately six miles east of the undeveloped towns of Chambless and Cadiz. At full operations the project will serve approximately seven trains per day. Capacity is estimated at 685 million cubic yards. The landfill has an estimated site life of 66 to 100 years depending on daily inflow. Based on the Initial Study, potential impacts of the project are comparable to those associated with the Eagle Mountain project.

Project Setting. The site is adjacent to the Bristol Dry Lake (to the south and west). The terrain is generally flat, sloping gently to the south. Existing land use to the north and south is largely undeveloped. To the east lie the undeveloped towns of Chambless and Cadiz in addition to citrus farms in Cadiz. Leslie Salt and National Chloride Mining Operations lie to the west, as do the towns of Amboy (six miles to the west) and Saltus (approximately two miles to the west).

Project Impacts. Other than those impacts anticipated in conjunction with any landfill project (e.g., landfill fires, vectors, the presence of hazardous materials, landfill gas migration) and those impacts which cannot be assessed until a site near Amboy is identified (e.g., noise), the following impacts are likely at the Amboy site:

Geologic Hazards. The nearest known cataloged fault is over three miles from the Amboy site. The site is not identified in the County General Plan as being located within a Geologic Hazards Overlay. However, a February 1988 background report for the San Bernardino County General Plan identified the project site within or very near the generalized liquefaction area of Bristol Dry Lake and near the volcanic activity area of Amboy Crater. Additional geologic studies will be conducted for the EIS/EIR.

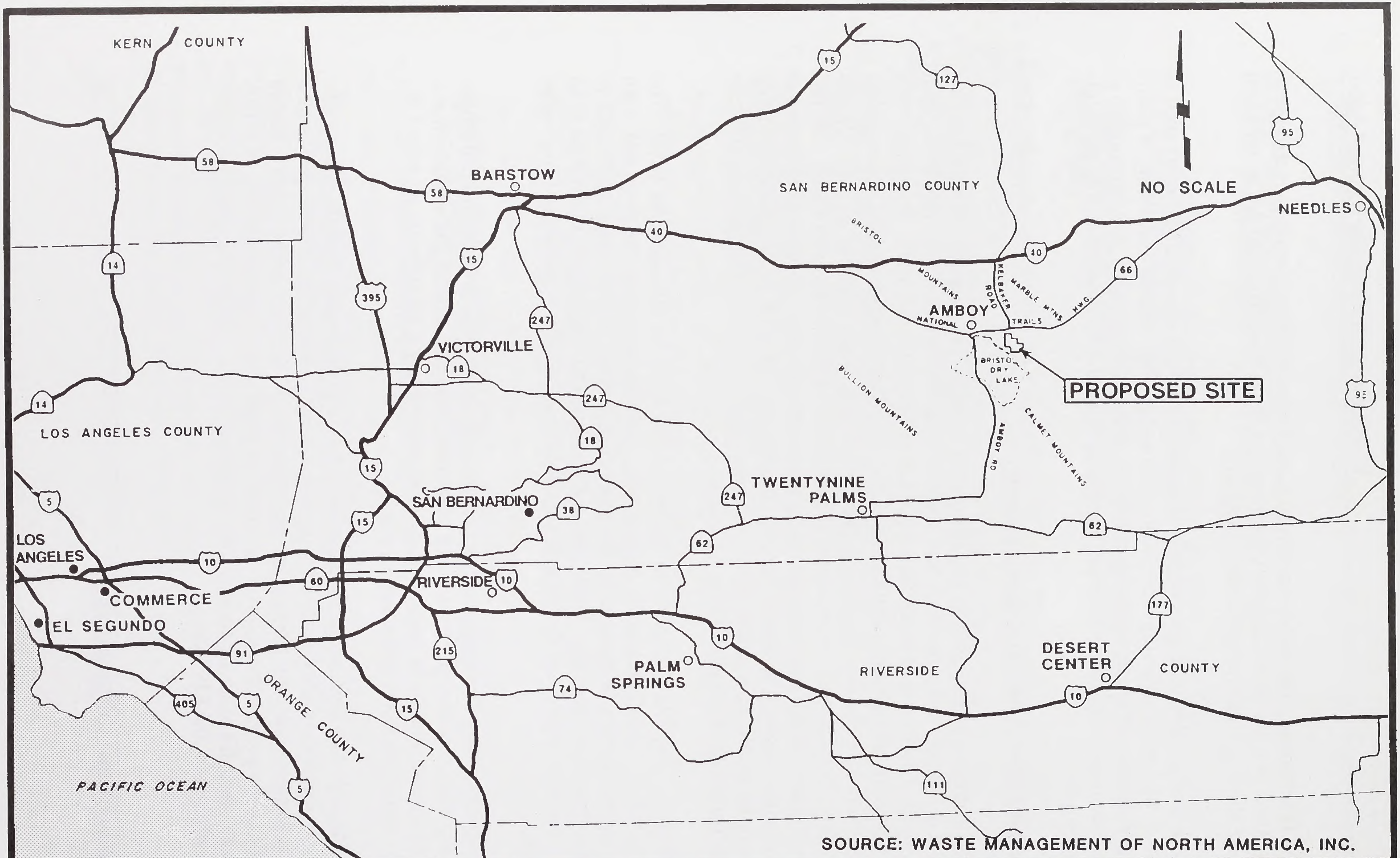

FIGURE 31. AMBOY DISPOSAL SITE LOCATION

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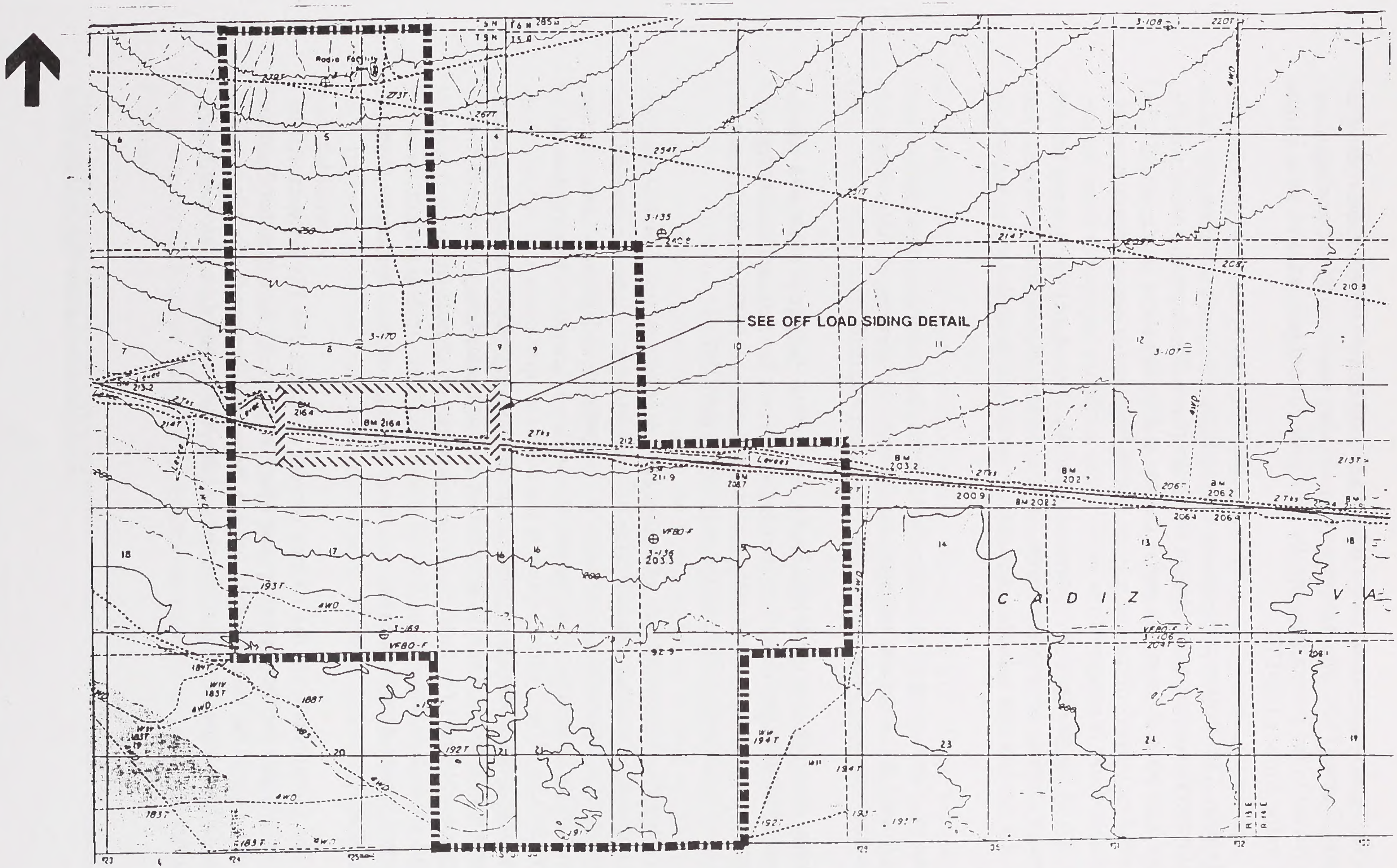

FIGURE 32. AMBOY DISPOSAL SITE

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Flood Hazards. The Amboy project site is not within a Flood Hazard Overlay Zone of the San Bernardino County General Plan. The Amboy project will alter storm runoff and surface water flows in areas adjacent to the project (i.e., the dry lake bed). The significance of these issues will be assessed in the Amboy EIS/EIR.

Groundwater Quality. The Amboy project is in a hydrologically closed groundwater basin where the groundwater flows toward the Bristol Dry Lake playa. The depth to groundwater is estimated at about 300 feet at the northern end of the site and 50 feet at the southern end. The northeast and southwest corners of the site may lie within fresh and brine groundwater zones, respectively. Potable water is pumped from wells to the northeast, upgradient from the site. However, the extent of the groundwater basin is not known. Consequently, it is not known whether public water supplies are drawn from the basin or will be affected by the project. The Initial Study for the Amboy site indicates that potable water will be delivered to the site in railroad tank cars.

Biological Resources. The Amboy project is known to be located in desert tortoise habitat and could potentially impact that federally and state-listed threatened species. A full assessment of biological resource impacts will be provided in the Amboy EIS/EIR.

Cultural Resources. According to the Initial Study, the Amboy project is in an area which contains numerous prehistoric and historic archaeological resources. Because landfilling will result in substantial disturbance to previously undisturbed areas, this project may result in significant impacts. These issues will be addressed fully in the EIS/EIR.

Land Use. To develop the Amboy project, a General Plan Amendment and Conditional Use Permit would be required. Development of the landfill will introduce a new use into the area that can be considered a substantial alteration of the present and planned uses in the Amboy/Cadiz/Bristol Dry Lake area. The project site is within a Resource Conservation (RC) General Plan Official Land Use District, which is intended for open space and limited rural development in remote areas of the County; the maximum housing density in the RC district is one dwelling unit per 40 acres. The site is within an area designated Improvement Level 5 (II-5), that is, an area planned for little or no development in remote areas with severe environmental and physical constraints or lack of resources. The Amboy project involves currently undisturbed land and requires a relatively large mining operation to create a location and cover for the landfill.

Socioeconomic. The Initial Study for the Amboy project indicates that 134 persons will be employed at the landfill after the facility has operated for five years. In the event that there are no sufficient housing units in the vicinity of the project, the applicant proposes mobile housing for temporary use. Other communities in the vicinity of the Amboy site do not have sufficient housing opportunities.

Public Services/Utilities. The Amboy site is a considerable distance from the nearest fire station that could respond to an emergency. Accordingly, the applicant will be required to provide sufficient water and storage to meet fire flow requirements.

Visual/Aesthetics. The project site is in a low-lying basin with mountains to the north and south. The project will create a mound approximately 420 feet above existing ground level in a relatively flat basin area which will be highly visible in all directions (i.e., from the National Trails Highway, the town of Amboy, and surrounding mountains). A full visual assessment will be conducted in the Amboy EIR/EIS.

Mineral Resources. The Amboy site is adjacent to extractive mining operations. The Initial Study for the Amboy project indicates that the project may have an impact on the potential to extract minerals, by limiting access to mineral resource areas near the site.

Air Quality. Using the same criteria of significance for Amboy as Eagle Mountain as described in the Air Quality section of this draft EIS/EIR, rail haul to the Amboy area would also result in a significant environmental impact. Proportionally, this project would result in the same level of emissions within and outside of the South Coast Air Basin.

Amboy Project Compared with Eagle Mountain Project. At full operations, the Eagle Mountain landfill project will serve up to six trains per day. Capacity is estimated at over 100 billion cubic yards. The landfill has an estimated site life of 115 years, much greater than that of Amboy. Compared with the Eagle Mountain project, a project at Amboy would be expected to have a smaller volume of material delivered by truck; a total of 500 tons per day of truck-hauled waste is proposed, as compared with the 4,000 tons per day expected with the Eagle Mountain project. This is due to the fact that only Barstow is located within the 100-mile radius in which truck hauling is expected to be economic. The following discussion highlights the similarities and differences between the Amboy and Eagle Mountain landfill projects.

There are no known significant geologic hazards associated with the Eagle Mountain project, to which the nearest active fault is three to four miles to the north in the Pinto Basin. At Eagle Mountain, depth to groundwater is between 350 and 400 feet at the western end of the East Pit and as much as 800 feet at the western end of the project site, but less elsewhere on the site. The general groundwater flow pattern is to the east-southeast. Both projects incorporate the same types of protective measures (e.g., liners, leachate collection systems) to minimize potential impacts.

The Eagle Mountain project will result in potentially significant impacts on bighorn sheep, desert tortoises, and a number of other species, all of which are mitigated below a level of significance. It is anticipated that mitigation for biology impacts for the Amboy project will involve many of the same mitigation measures identified in the Eagle Mountain landfill draft EIS/EIR.

Both projects will require existing General Plan amendments.

Although dwelling units in the town of Eagle Mountain will have to be upgraded, the existing housing stock is sufficient to house the labor force at the landfill. Infrastructure (sewer, water, schools, and other utilities) is currently available in the town of Eagle Mountain.

For the Eagle Mountain project, the impact on mineral resources is also a concern. The phasing plan for the landfill will ensure that areas with economically recoverable mineral deposits will not be landfilled for a period of approximately 85 years. If prior to that time it becomes economically feasible to undertake mining, a supplemental environmental document will be prepared to assess the impacts of recovering iron ore at Eagle Mountain.

The visual impact assessment for the Eagle Mountain project showed no significant visual impact.

With approximately the same inflow as the Eagle Mountain project, it is assumed that stationary source emissions and emissions from landfill equipment would be roughly the same or slightly less at Amboy than at Eagle Mountain. Moreover, depending on what routes are used for trains serving Amboy, rail emissions may be slightly less for Amboy than for the proposed Eagle Mountain project.

It is assumed that with the exception of air quality, mitigation measures similar to those recommended for the Eagle Mountain project which would reduce impacts to levels of insignificance would be necessary and approved in conjunction with the Amboy project.

b. Proposed Landfills/Expansion of Existing Landfills in Counties Where Waste Is Generated

An issue of concern expressed in response to the Notice of Preparation was that waste generated outside Riverside County not be accepted in conjunction with the Eagle Mountain project. Because of the potential life span of the Eagle Mountain project and the impending shortage of disposal capacity in the counties to be served by the project (see Section I.A.), the primary effect of not accepting imported waste at Eagle Mountain would be to increase reliance on efforts to site new facilities or to expand existing facilities in other counties in southern California.

The impacts associated with developing new sites or expanding existing sites that would serve the same market areas as the proposed action are shown in Table 3. Potential sites and market areas include:

1) Elsmere and Sunshine canyons potentially serving the city of Los Angeles and other parts of the northwestern Los Angeles County.

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
Geology	Surficial material in the area consists of stream terrace deposits composed of sands, silts, and gravels. These sediments are underlain by marine sandstones, siltstones, and conglomerates of the Pliocene Fernando and Miocene Puente formations. Basement material consists of mesozoic granite intrusives and low-grade metamorphic rocks.	Site underlain by Pico and Towsley Formations. Permeability rated good. Core tests have indicated low permeability at the project site.	Site underlain by siltstones, claystones, and silty sandstones of the Pico Formation. Permeability rated good. Bedrock moderately fractured; most fractures closed and tight.	The area consists primarily of igneous and metamorphic bedrock exposed in canyon walls. Quaternary alluvium consisting of sands, silts, and gravels is exposed in canyon bottoms. The bedrock type found at the site has a low permeability rating.	The area consists of igneous and metamorphic bedrock exposed in the canyon walls. Surface alluvium is exposed in canyon bottoms and upper canyon slopes. The most numerous exposures of bedrock are at the base of canyon; upper canyon contains substantial cover of alluvial materials. The bedrock type found at the site has a low permeability rating.	Lithology in vicinity of site consists of upper Jurassic and Palocene marine sedimentary deposits. Basement not exposed but thought to consist of granite. Thin deposits of alluvium found in canyon bottoms A number of clay and gravel pits are present in surrounding area. The bedrock type found at the site has a relatively low permeability rating.
Seismicity	The Whittier Fault Zone is located to the south within 2 miles of the landfill. This zone includes several historically active northwest-trending faults including the Whittier Narrows Fault which experienced a 6.0 magnitude	The inactive Whitney Fault is found on the site. Its location relative to the proposed landfill footprint is unknown. Faults from the Elsmere oil field also cross the site. The active San Fernando fault is about 1.5 miles from the	The potentially active Santa Susana fault in within 1 mi. of the site. Amother inactive east-west fault is found on the northern part of site The active San Fernando fault is within 4 miles of the site.	Active faults in the vicinity of the site include the San Andreas Rift Zone 4 miles north, the Lytle Creek Fault 1.5 miles east, and the Cucamonga fault 0.75 mile to the south. Although close to active faults, the site is not known to	San Andreas Rift Zone (active fault) located approximately 1.2 miles southwest. Cleghorn fault (also active) may underlie portions of the site.	The seismically active Elsinore Fault Zone is located 1 to 2 miles southwest. This zone includes several active northwest-trending strike-slip faults.

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES
(continued)

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
	quake in Oct. 1988.	site. The active San Fernando fault is 4 miles from the site.		be situated on a Holocene fault.		
Air Quality	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization same order of magnitude or slightly less than Eagle Mountain. Project site impacts concentrated in South Coast Air Basin.	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization same order of magnitude of slightly less than Eagle Mountain. Project impacts concentrated in South Coast Air Basin.	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization same order of magnitude or slightly less than Eagle Mountain. Project impacts concentrated in South Coast Air Basin.	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization also less than proposed project. Project impacts concentrated in South Coast Air Basin.	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization also less than proposed project. Project impacts concentrated in South Coast Air Basin.	Mobile air emissions considerably less than for Eagle Mtn. project. Emissions from landfill equip. and LFG utilization also less than proposed project. Project impacts concentrated in South Coast Air Basin.
Ground Water	Elevation of ground water in vicinity of landfill is approximately 175 feet above MSL within the Gaspar Aquifer. However, elevations may vary considerably due to fluctuations in amt. of recharge at the Whittier Narrows Flood Control Basin.	Project site in vicinity of Santa Clarita Vly. ground water basin. At mouth of canyon, depth to ground water is app. 22 ft. Depth of canyon itself unknown. Monitoring is currently underway to characterize existing ground water quality	Exploratory borings have identified potentially limited ground water resources beneath site. Movement of shallow ground water assumed in direction of surface water. Extent unknown. Canyon previously used for oil recovery.	Although beneficially used ground water does not underlie the site, local areas of shallow ground water may occur as evidenced by springs in the surrounding area.	Ground water in the area anticipated to flow to south. Depth to ground water is variable due to poorly connected fracturing systems. Ground water quality is generally good.	Ground water quality in sedimentary rocks is anticipated to be low due to high levels of total dissolved solids; particularly likely in Jurassic rocks. Water in alluium expected to be better quality. Depth to ground water unknown but anticipated to be

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES
(continued)

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
	Ground water quality in Gaspar Aquifer considered poor. Regional ground water flow direction is generally to the southwest.	near the project site.				shallow in valleys filled with alluvium. Possible ground water recharge area immediately downstream.
Surface Water	San Gabriel River and Whittier Narrows Flood Control Basin are located to the northwest. Topography generally slopes to the northwest toward the Flood Control Basin.	Canyon drains to the north-northwest into the Newhall Creek and thereby to Santa Clara River.	Surface and ground water flows to the south. Flows prevented from entering Norman Reservoir. Water quality monitoring has not found evidence of contamination from existing landfill operations.	Site drains from north to south. Potential impacts to ground water basin beneath vly. floor.	Site drains from east to west to river with wells in river bottom Potential impact of surface flows to ground water basin beneath vly. floor.	General topography of the area slopes to the southwest and drains to Temescal Creek. Site is within large upstream area which is drained by Temescal Creek. Regional drainage pattern is to the northwest.
Biological Resources	If landfill expansion only increases elevation, biological resource impacts will be minimal. Depending on which new areas are proposed for devel. impacts will involve loss of southern riparian woodland, southern coastal sage scrub, cismontane-introduced	Site contains foothill oak woodland and chaparral. Presence of rare and/or endangered species unknown	Project will result in loss of vegetative habitat, primarily southern oak woodland coastal sage scrub. Project area serves as part of corridor for gene flow and species movement between San Gabriel and Santa Monica Mtns. via Simi Hills.	Presence of rare and/ or endangered plant & animal species unknown. Site assess. currently being conducted by San Bernardino County.	Presence of rare and/ or endangered plant & animal species unknown. Site assess. currently being conducted by San Bernardino County. Preliminary analysis indicated major biological problems with this site.	Site known to contain federally endangered SKR. Development can not occur until HCP is approved.

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES
(continued)

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
	grassland, and some disturbed areas. Presence of rare and/or endangered animal species unknown.					
Noise	Residential uses and school lie immediately east of the site in Hacienda Heights. Landfill operations in new canyons may result in significant impacts.	Existing noise generators near site incl. Antelope Vly. and Sierra Hwys. Project will result in increased noise on surface streets near site. Proj. impacts not likely to be significant.	Preliminary draft EIR forecasts 0.3 dBA increase in ambient noise from project. This increase would be barely audible & not significant.	Because of location, ambient noise levels relatively low. Potential impacts not likely to be significant. Only potential receptor in vicinity of site is regional park to the east.	Because of location, ambient noise levels relatively low. Potential impacts not likely to be significant. No known sensitive receptors near site.	No known sensitive receptors in vicinity of site. Noise impacts not likely to be significant.
Traffic	Access from SR-60 at Crossroads Parkway adequate for existing and anticipated future traffic. Interchange provides direct access to site. Significant traffic impacts.	Traffic study currently being conducted as part of Program EIR for County-wide Solid Waste Mgmt Syst. Impacts not known at present. Cumulative impacts due to growth in City of Santa Clarita may significantly impact interchange capacity near site.	Preliminary draft EIR indicates increased volumes on San Fernando Road, although peak hour increases not considered significant.	No existing access to site. Devel. will require construction of access road & possib. new freeway interchange. Traffic conditions not congested in vicinity of site.	No existing access to site. Devel. will require construction of access road. Traffic conditions not congested in vicinity of site.	Lack of planned devel. in proximity to site may limit traffic impacts; to be evaluated in project-specific EIR.

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES
(continued)

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
Land Use	Residential uses & school lie east of site. Lots abut prop front face; trucks will be visible if devel. occurs in new canyons. Landfill equip. will be visible as cover is obtained to support increased elevation in existing disposal area.	Unincorporated lands near site designated for Hillside Mgmt. Portion owned by U.S. Forest Service. Dev. as landfill may conflict with Forest Service policy.	Site partially designated in County Plan for Hillside Mgmt. & Significant Ecological Area. Nearest devel. is trailer within 200 ft. of site & housing within 1/2 mile.	Devel. will require transfer from U.S. Forest Service. Adjacent & surrounding uses generally compatible. No encroachment of urban devel. near project site.	Devel. will require land transfer from U.S. Forest Service. Adjacent & surrounding uses generally compatible. No existing or planned urban devel. near proj. site.	Because site has not been specifically delineated, land use policy issues have not been identified.
Views/ Aesthetics	Residential & school uses abut the site. It may not be possib. to fully mitigate visual/aesthetic impacts of devel. in new areas.	Canyon interior generally shielded from view by existing ridgelines, although site visible from highways and devel. near site.	Views of upper elevations of landfill will be visible from portions of I-5 & at a distance from residential areas south east of site.	Limited, if any, visibility from uses in proximity to site. Front of landfill visible at distance from throughout San Bernardino Vly. Visible from I-15 at distance of about 1/2 mile.	Limited visibility from I-15. Accessible views from light traveled road north of site. Potential views of disposal vehicles on access road depending on alignment.	Lack of existing & planned residential uses in vicinity of site limits potential adverse visual impacts of project.

TABLE 3
COMPARISON OF ALTERNATIVE LANDFILL SITES
(continued)

Issue Area	Puente Hills	Elsmere Canyon	Sunshine Canyon	Duncan Canyon	Cleghorn Canyon	El Sobrante
Public Safety	Devel. will result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires, etc.	Devel. will result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires, etc.	Devel. wil result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires, etc.	Devel. will result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires.	Devel. will result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires.	Devel. will result in impacts related to presence of hazardous materials in solid waste, vectors, surface & subsurface fires.
Other	Previous EIR identified potential paleontological & archaeological impacts & mitigation measures. New devel. may result in the same impacts.	Numerour invertebrate species identified in canyon. These resources potentially significant. Site over old oil field; may be subject to seepage. Devel. may require provision of services & utilities.	Preliminary draft EIR does not identify other potentially significant impacts related to project.	Relative isolation of site may result in need to provide public services and utilities.	Relative isolation of site may result in need to provide public services and utilities.	Based on available data other issues have not been identified.

2) Puente Hills Landfill serving the San Gabriel Valley in Los Angeles County.

3) Duncan and Cleghorn canyons serving the valley area in San Bernardino County.

4) El Sobrante Landfill serving western Riverside County.

The existing Sunshine Canyon is located in the northwest portion of the City of Los Angeles immediately west of Interstate 5 (Figures 33 and 34). The facility receives between 5,000 and 7,000 tons per day and is permitted until September, 1991. The owner and operator, Browning-Ferris Industries, is proposing to expand the facility onto land within unincorporated Los Angeles County. The County recently approved a land use permit and certified the EIR to utilize a small portion of the potential expansion capacity of 70 million tons.

The Puente Hills Landfill is located southeast of the 60 freeway and I-605 in the San Gabriel Valley (Figures 33 and 35). It is owned and operated by the Los Angeles County Sanitation Districts. The existing land use permit for the site restricts the facility from receiving more than 12,000 tons per day. This permit expires in November, 1993. Of the estimated 106 million ton fill capacity of this site, approximately 75 million tons will remain when the permit expires. The sanitation districts are expected to initiate environmental analyses to expand the site in the near future.

The Elsmere Canyon Landfill is a proposed facility located at a site in unincorporated Los Angeles County east of the Antelope Valley Freeway and approximately two miles north of the intersection of the Antelope Valley Freeway and the Golden State Freeway (I-5) (Figures 33 and 36). The entire site is approximately 1,500 acres with the landfill utilizing 650 acres. The estimated disposal capacity is 190 million tons. Portions of the site are owned by the U.S. Forest Service. The project will also require a Conditional Use Permit from Los Angeles County. An EIS/EIR is currently being prepared jointly for the U.S. Forest Service and the Los Angeles County Regional Planning Commission, which are the co-lead agencies.

The proposed new Duncan Canyon Landfill site is located northerly of the I-15 freeway west of Lytle Creek (Figures 37 and 38) in San Bernardino County. The estimated landfill area would comprise approximately 228 acres; the total site area is approximately 326 acres. The estimated site capacity of 106 million cubic yards. Preliminary environmental studies conducted by San Bernardino County have eliminated Duncan Canyon as a potential future landfill site.

The proposed new Cleghorn Canyon Landfill site is located totally in the San Bernardino National Forest north of the Cajon Campground and east of Lost Lake (Figures 37 and 39). The estimated landfill area would comprise approximately 826 acres; the total site area is about 1,043 acres. The estimated capacity is 770 million cubic yards. Preliminary environmental

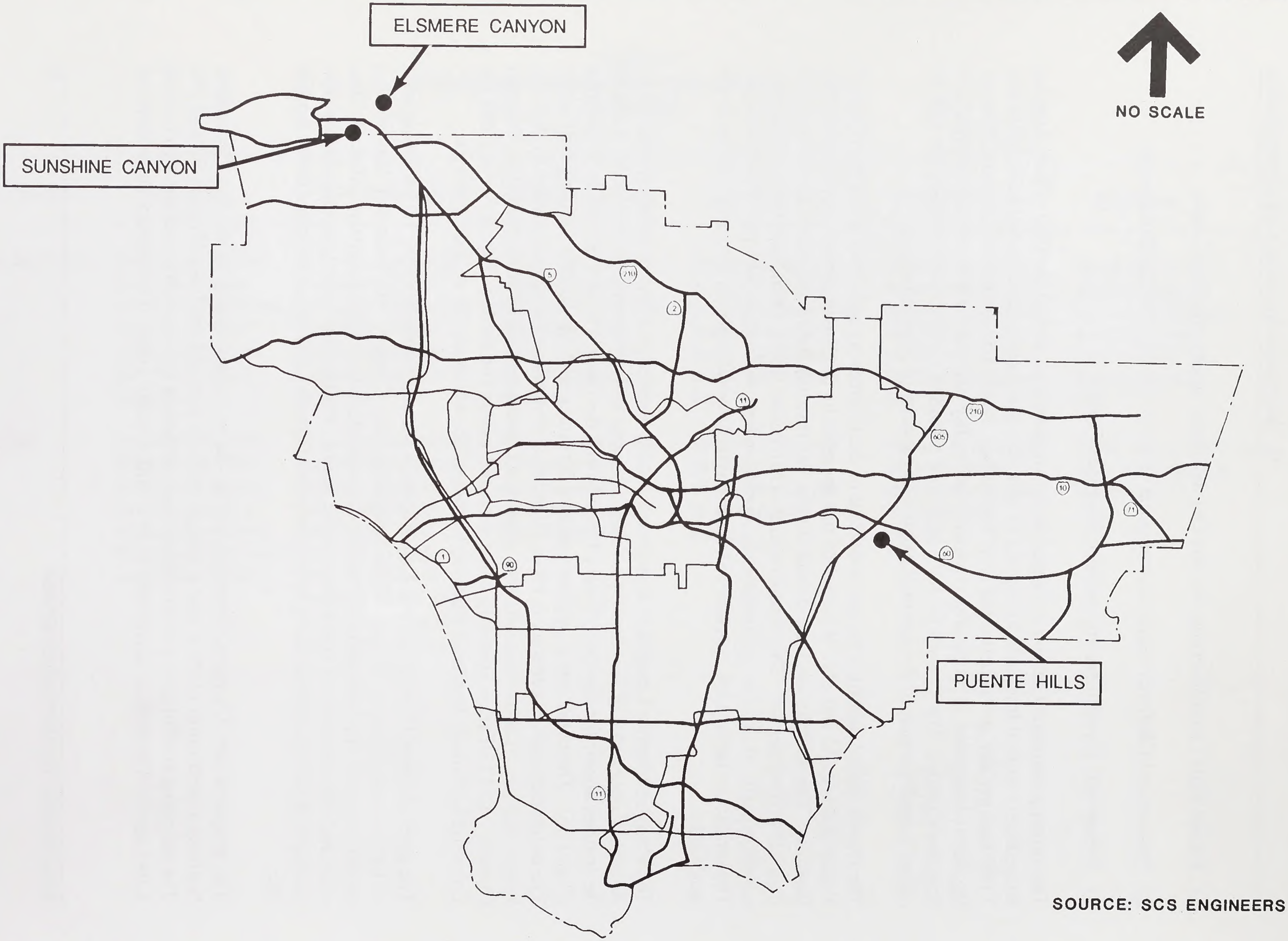
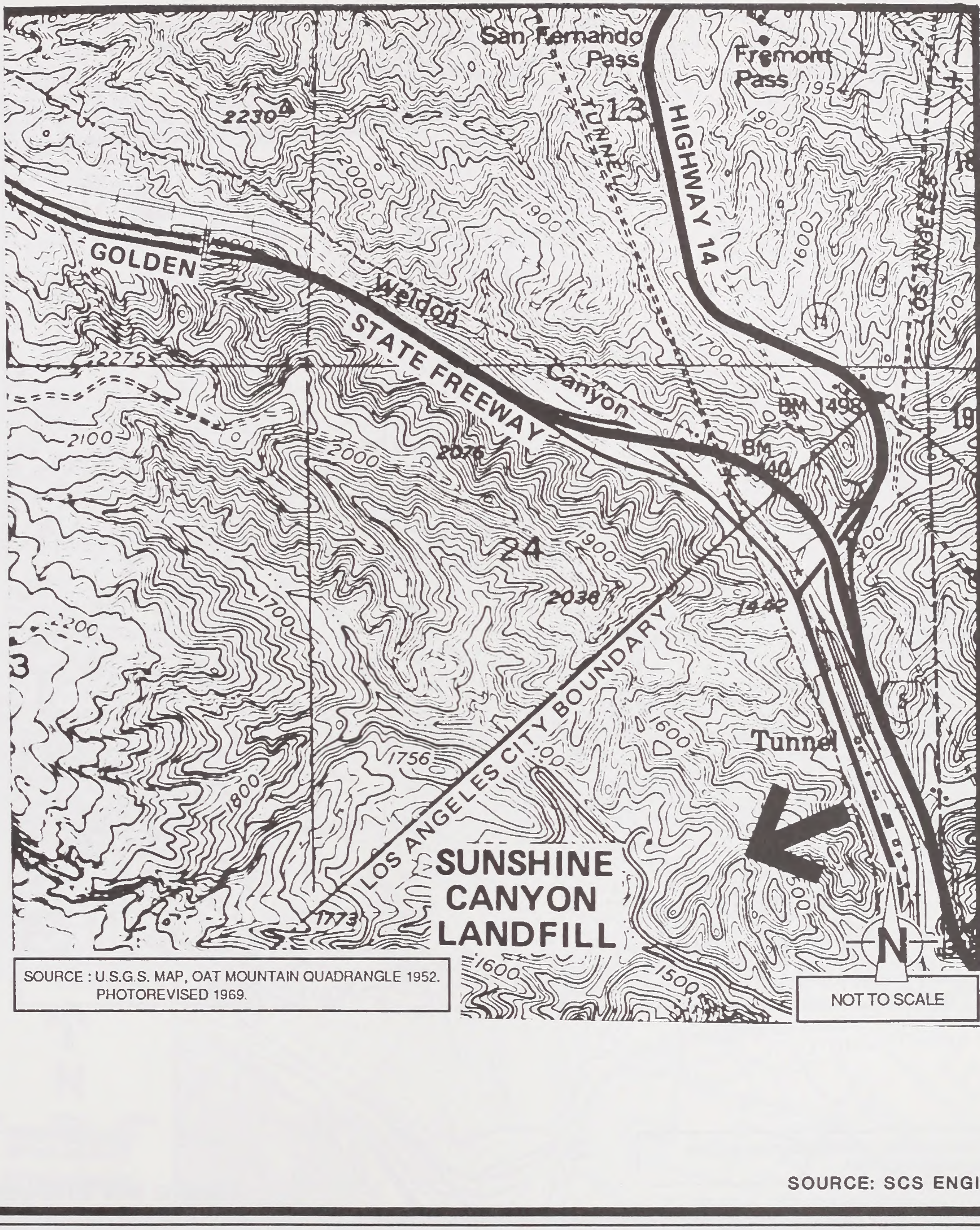


FIGURE 33. ALTERNATIVE LANDFILL SITES IN LOS ANGELES COUNTY

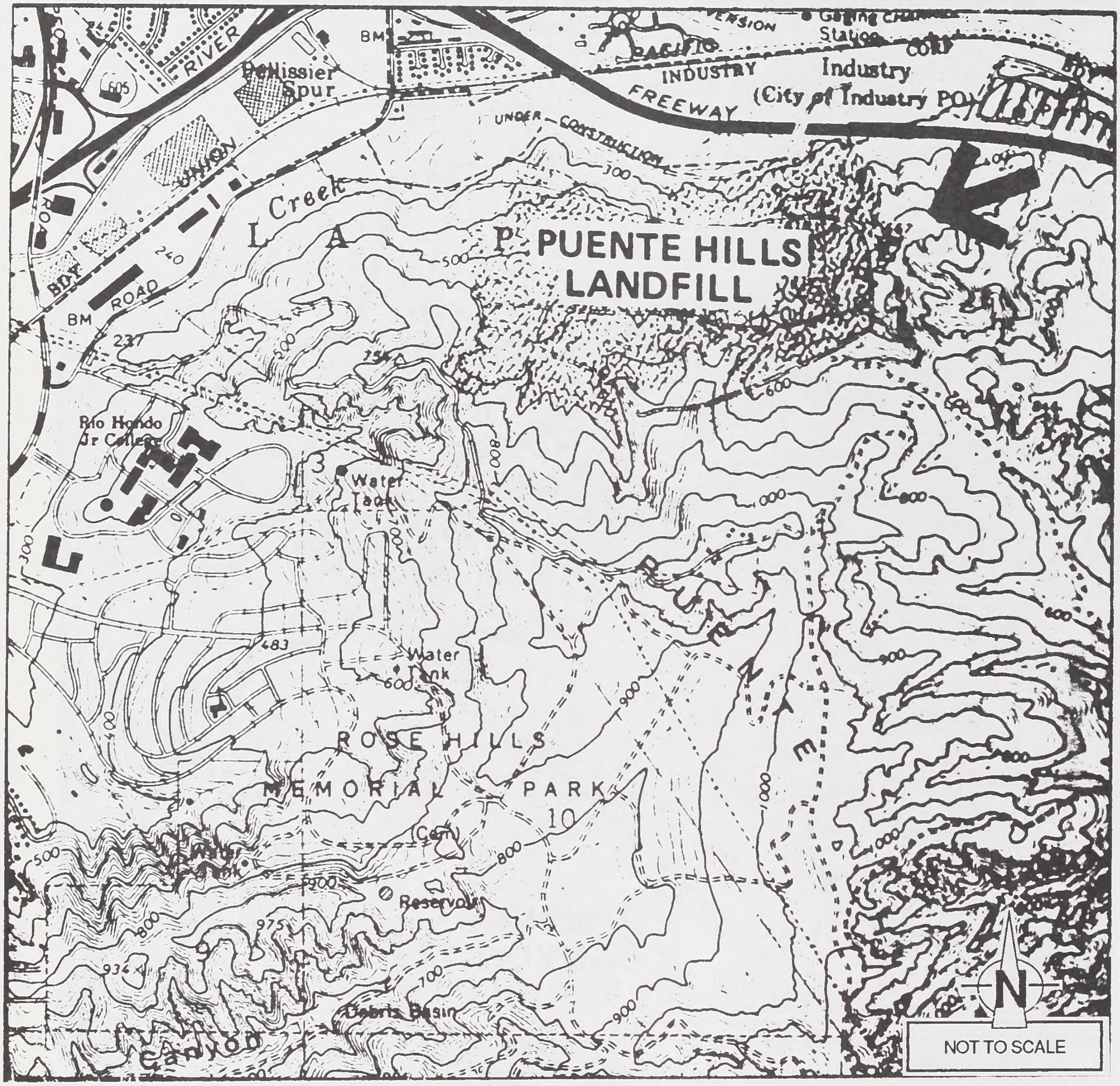
RECON



SOURCE : U.S.G.S. MAP, OAT MOUNTAIN QUADRANGLE 1952. PHOTOREVISED 1969.

SOURCE: SCS ENGINEERS

FIGURE 34. SITE LOCATION MAP OF SUNSHINE CANYON LANDFILL - LOS ANGELES COUNTY



U.S.G.S. MAP, EL MONTE QUADRANGLE 1966.
PHOTOREVISED 1981.

SOURCE: SCS ENGINEERS

FIGURE 35. SITE LOCATION MAP OF PUENTE HILLS LANDFILL - LOS ANGELES COUNTY

RECON

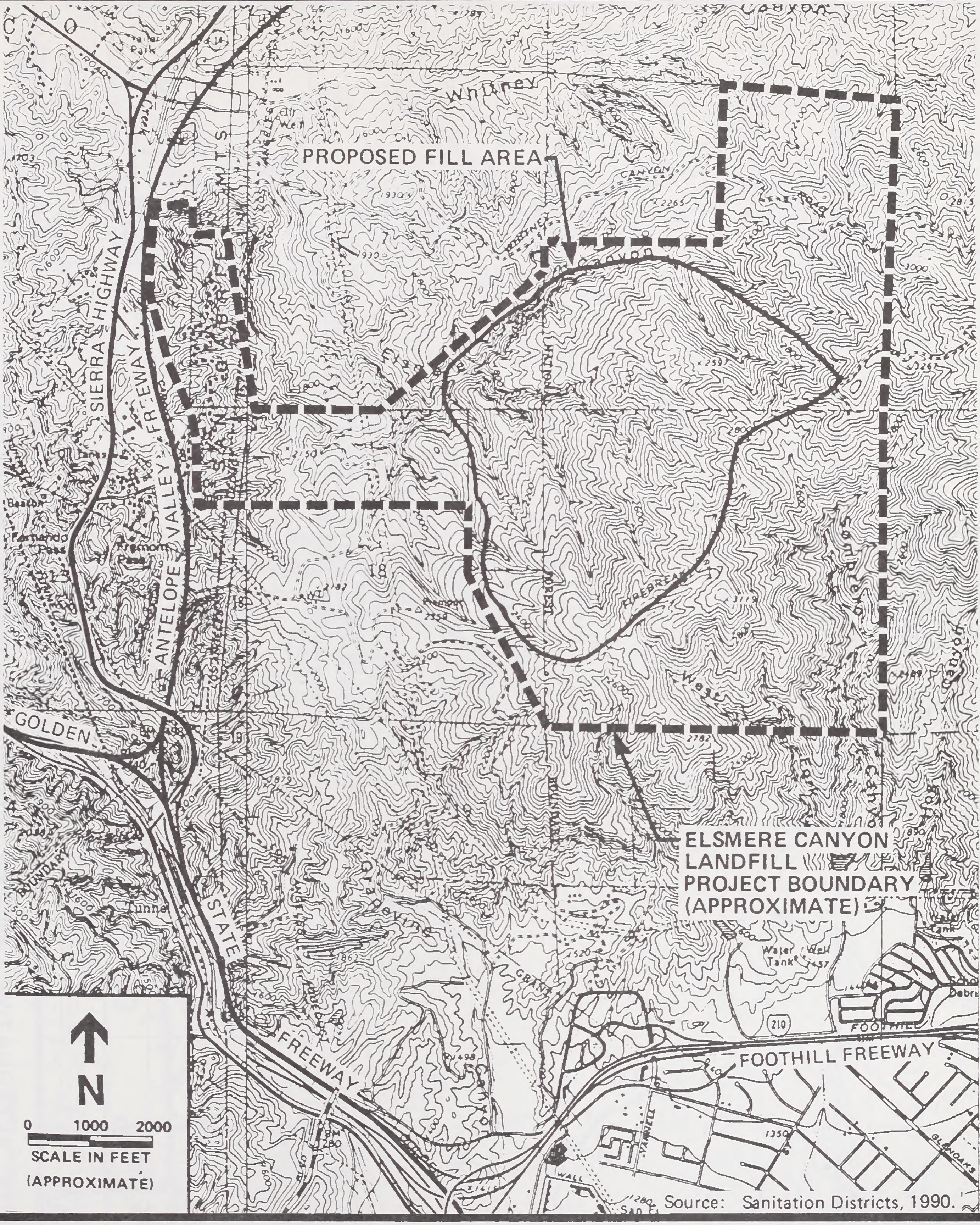
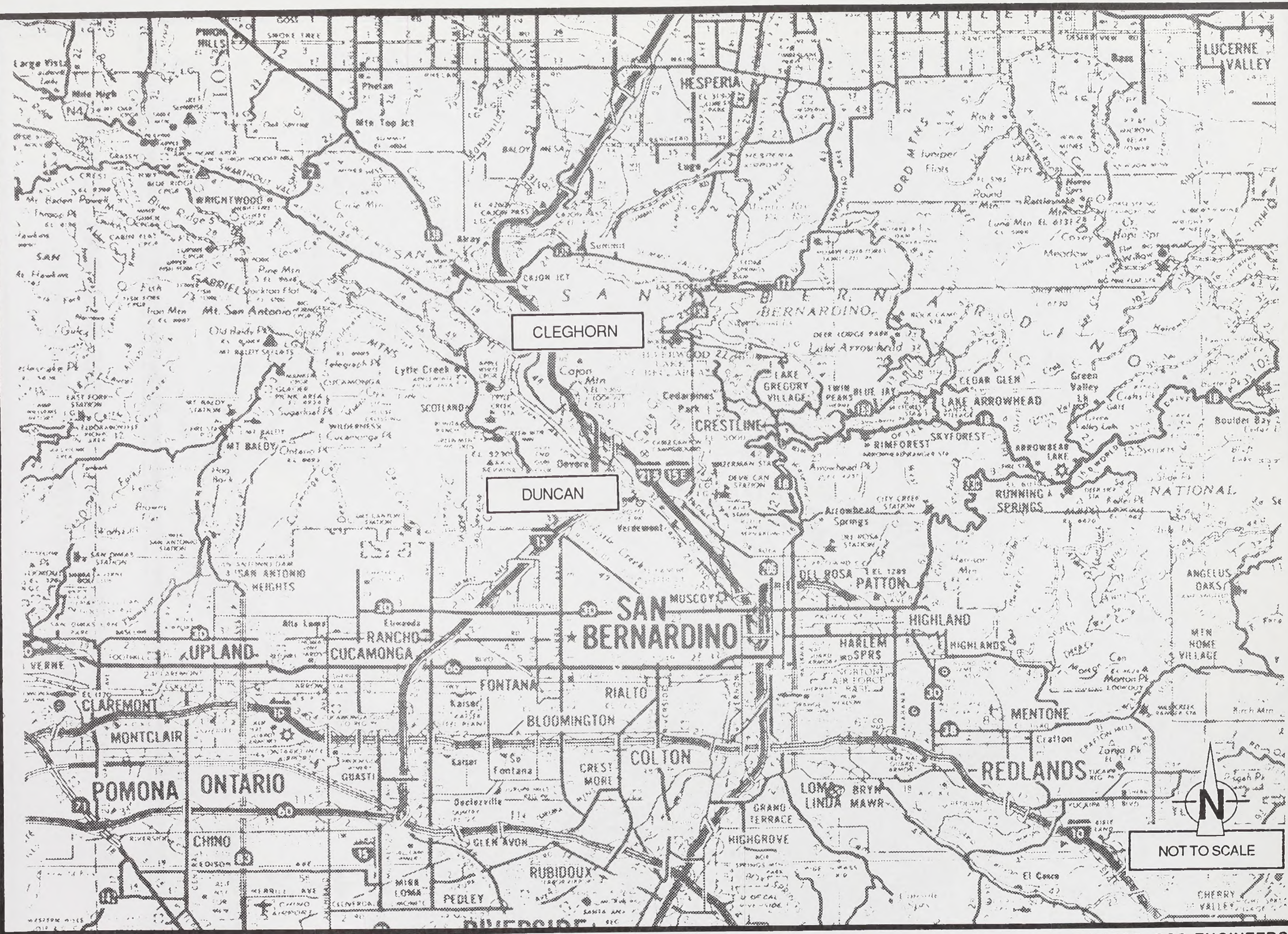


FIGURE 36. SITE LOCATION MAP OF ELSMERE CANYON LANDFILL – LOS ANGELES COUNTY

RECON



SOURCE: SCS ENGINEERS

FIGURE 37. ALTERNATIVE LANDFILL SITES IN SAN BERNARDINO COUNTY

RECON

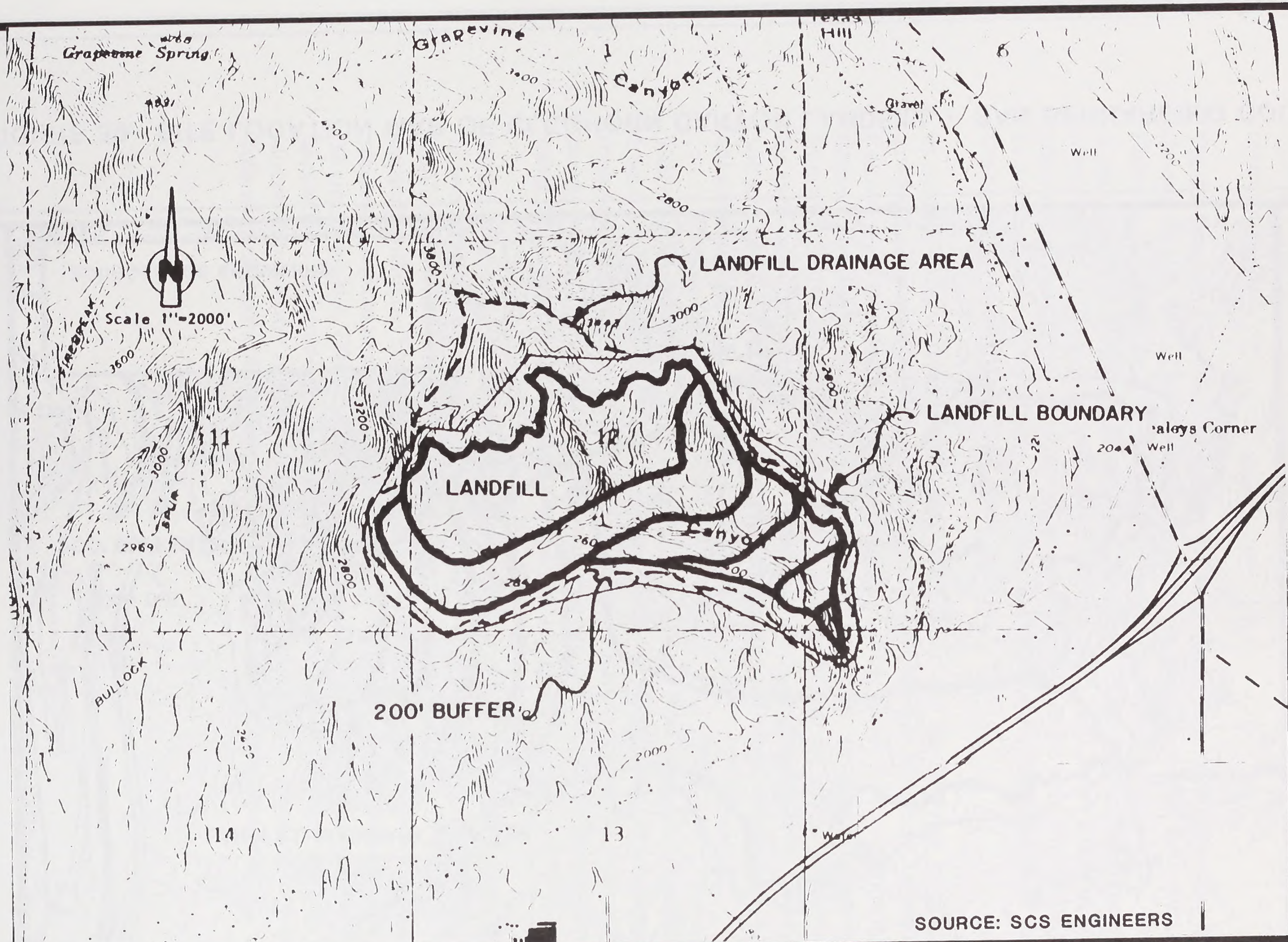


FIGURE 38. SITE LOCATION MAP OF DUNCAN CANYON LANDFILL – SAN BERNARDINO COUNTY

RECON

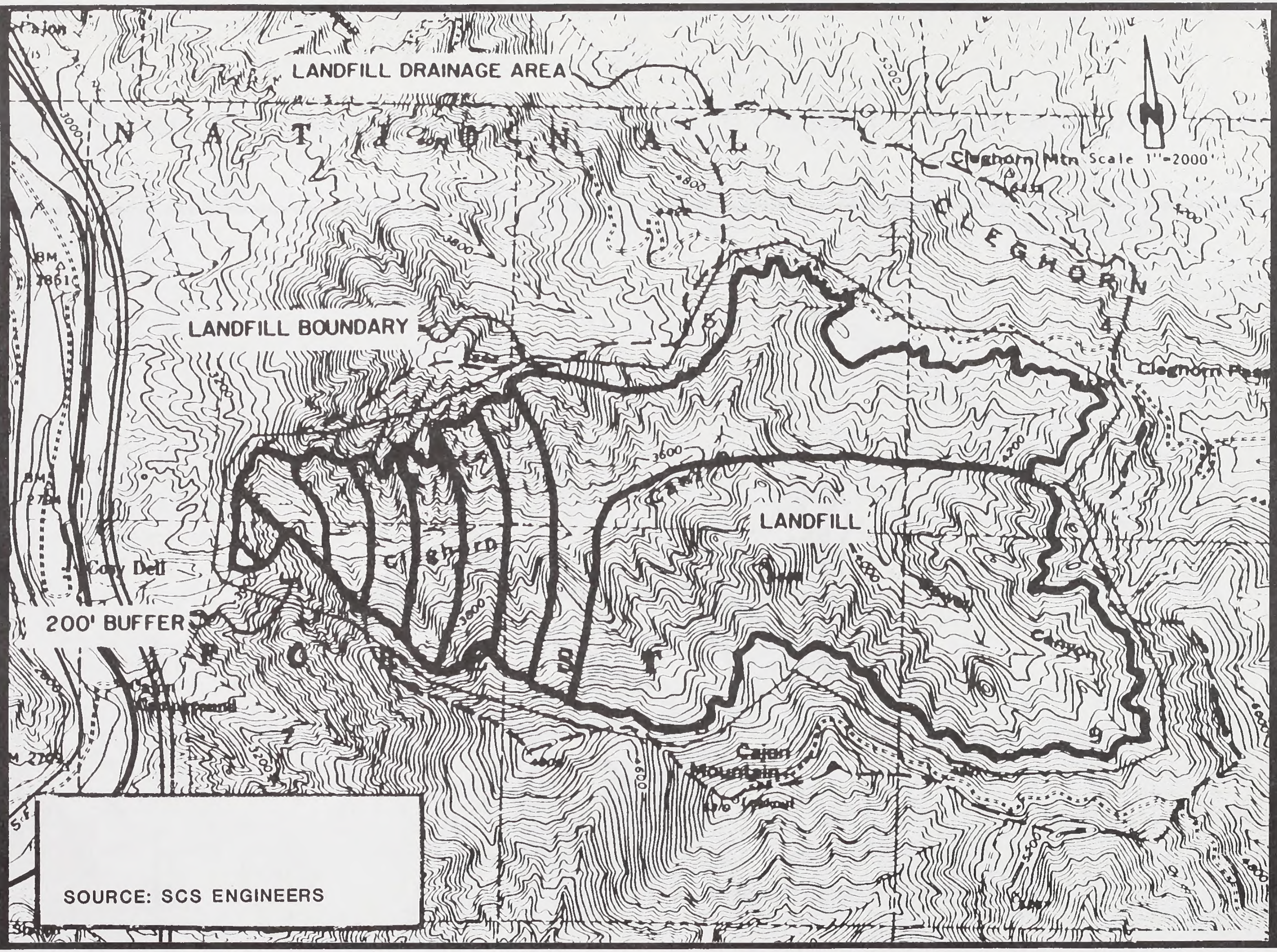


FIGURE 39. SITE LOCATION MAP OF CLEGHORN CANYON LANDFILL - SAN BERNARDINO COUNTY

RECON

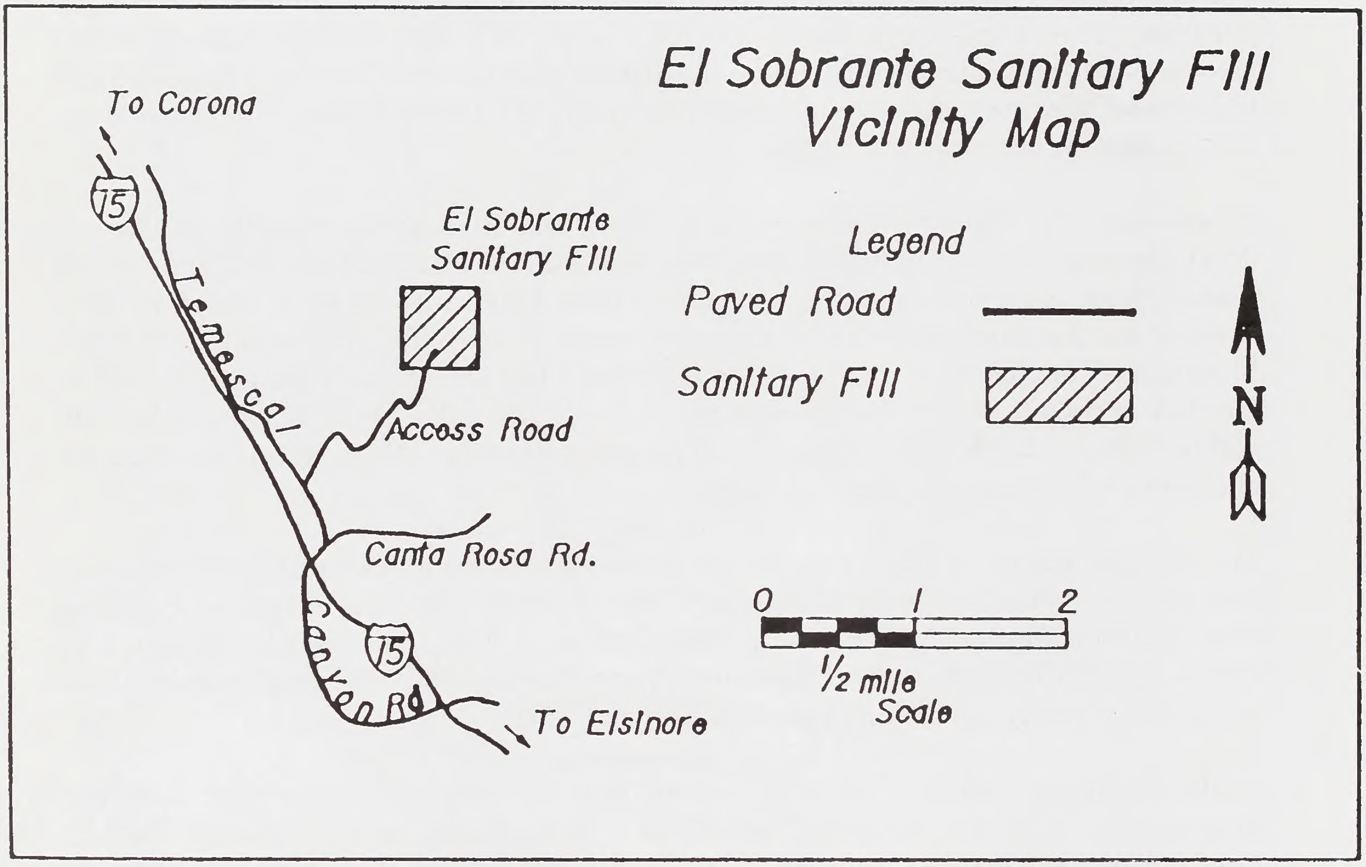
studies conducted by San Bernardino County have eliminated Cleghorn Canyon as a potential future landfill site.

The El Sobrante Landfill, operated by Western Waste Industries, is located east of I-15 in Corona (Figure 40). The facility currently serves waste generated in Corona, Norco, Lake Elsinore, portions of the City of Riverside, and nearby unincorporated areas. The existing site is approximately 160 acres and receives an average daily tonnage of almost 900 tons. The remaining fill volume is approximately 5,600,000 tons. The County Board of Supervisors has taken action to authorize negotiations on the expansion of the site. The Eagle Mountain and El Sobrante sites are tentatively identified facilities in the 1989 Tri-Annual Revision to the County Solid Waste Management Plan.

In summary, the Sunshine Canyon, Puente Hills, and El Sobrante projects involve the development of new disposal areas at existing landfills. The Elsmere, Cleghorn, and Duncan Canyon projects are new landfills. The size of these projects varies appreciably: (1) both Elsmere and Sunshine canyons have capacity to serve an operating volume similar to Eagle Mountain for the foreseeable future; (2) it is assumed that the inflow at Puente Hills will be the same or slightly greater than the existing inflow (12,000 tpd); (3) the El Sobrante Landfill will be closed in 2,000; and (4) information regarding capacity, inflow, and closure dates are not known for Duncan and Cleghorn landfills.

This alternative avoids a major source of air emissions from the project, that is, rail emissions from the transportation of waste to the project site. However, even with mitigation, emissions from landfill equipment and stationary source emissions from LFG thermal combustors or energy recovery facilities at these alternative future sites would still be considered significant using the air quality significance criteria in Section IV.D.

In the air quality technical report, emissions from the proposed action were compared quantitatively with an "In-Basin" alternative. This alternative assumes that southern California's landfill needs will continue to be met through use of existing and additional capacity within the South Coast Air Basin. Under this alternative, truck traffic associated with residential and commercial waste pickups would be identical with that associated with the Eagle Mountain project. (These impacts were assumed to be identical for all cases and thus were not quantified.) In addition, it was assumed that there would be a slight increase in truck travel distances to transfer stations and/or landfills. This increase in truck traffic was based on the following estimates of replacement and expanded landfill capacity (Table 4):



SOURCE: RIVERSIDE COUNTY SOLID WASTE MANAGEMENT PLAN, 1989

FIGURE 40. SITE LOCATION MAP OF EL SOBRANTE LANDFILL–
RIVERSIDE COUNTY

RECON

TABLE 4
INCREASED TRAVEL DISTANCES TO TRANSFER STATIONS ASSOCIATED WITH ALTERNATIVE LANDFILL SITES

Origin of Waste Material	Estimated Quantity (tons/day)	Additional Round-trip Distance
Orange County	2,000	0 miles
Riverside County	2,000	0 miles
San Bernardino County	2,000	60 miles
San Gabriel Valley	7,000	0 miles
Central LA/SF Valley	5,000	20 miles
Weighted Average	18,000	12.2 miles

For this case, no use of rail was assumed. With respect to waste handling equipment at the landfill, project emissions were assumed to be associated with landfill face operations; cover excavation, hauling, and daily application; and road maintenance. Landfill gas generation was conservatively assumed to be the same as the amount estimated for the Eagle Mountain project, although the higher moisture levels and rainfall in the South Coast Air Basin would be expected to result in significantly more landfill gas generated for each ton of waste buried. Compliance with applicable dust control regulations and best available control technology was also assumed for this alternative.

The emissions associated with this alternative are compared with the proposed action, the reduced landfill operations alternative, and the alternate remote disposal alternative in Section IV.D. of this draft EIS/EIR.

Because this alternative would not eliminate the one significant nonmitigable impact related to the project (i.e., air quality), it is not environmentally superior under CEQA. This alternative also does not achieve consistency with the existing policy in the air quality management plan to transport biodegradable wastes by electrified rail lines to landfills outside the South Coast Air Basin.

The diversion of long-distance rail trips to short-distance truck trips to serve these alternate sites would result in less energy consumption relative to the proposed action. In addition, because of the arid climate at Eagle Mountain, potential energy recovery over the life of the proposed action is probably less at the project site than could be achieved at the alternative sites with comparable capacities and inflows.

Although subject to site-specific mitigation measures, this alternative gives rise to the following environmental issues which are not encountered with the proposed action.

If Elsmere is not developed and Sunshine Canyon is not expanded, the use of multiple sites (to achieve 20,000 tpd refuse disposal) may result in a higher incremental risk to regional groundwater resources than would occur from using any single site. At a minimum, the use of multiple sites creates the need to design site-specific containment facilities and to implement groundwater monitoring programs at each location.

Some of these sites (e.g., Puente Hills and Sunshine and Elsmere canyons) are relatively close to or are anticipated to be affected by the spread of urban development within Los Angeles County. This proximity and attendant land use compatibility problems would not be encountered at the project site. The control of development achieved through the implementation of specific plans for both the landfill and the town of Eagle Mountain and the lack of other pressures to urbanize near the project site enable the project to achieve a higher degree of land use compatibility than may occur in proximity to alternative sites.

The use of these alternative sites would not necessarily involve processing wastes through MRFs, where recyclables and hazardous materials would be removed from the waste stream. However, under AB 939 mandates, it is expected that a majority of the existing wasteshed will need to be processed through MRFs to ensure compliance with landfill diversion mandates (25% by 1995, 50% by 2000). Under this alternative, loads would be checked for hazardous materials at the landfill. It is not clear that they would undergo the scrutiny they would receive at an MRF, where all waste would be removed from trucks, sorted, and loaded into shipping containers or long-haul waste trucks. Although these landfills may also be designed to jointly serve as recycling/waste recovery centers, projects have not been defined in sufficient detail to determine whether they would serve this purpose.

Other significant impacts associated with the development of these sites include the loss of oak trees at Sunshine Canyon, the loss of Stephens' kangaroo rat habitat at El Sobrante, the need to construct transportation improvements if either Duncan or Cleghorn Canyon is developed, the loss of potential paleontologic resources at Elsmere Canyon, and the visibility of trucks and the front face of landfill areas if new canyons are proposed for development at Puente Hills. While many, if not all, of these impacts can be mitigated, the same is true of other potentially significant impacts at Eagle Mountain. Since this alternative would not reduce air emissions to levels of insignificance, it is not considered environmentally superior under CEQA.

H. Alternatives Considered but Eliminated from Detailed Analysis

1. Landfills in Counties Where Waste Is Generated

Other potential landfill sites in Los Angeles County, namely, Towsley Canyon, Blind Canyon, and Mission–Rustic Canyon, were not analyzed in further detail because of their limited capacities and because inadequate information is currently available regarding the description of projects at these sites. Consequently, they were deemed, at this time, to be remote and speculative.

2. Alternative Sites in the Eagle Mountains

a. Central Pit

This alternative site was not analyzed in further detail because it is more distant from the proposed Phase II container handling yard and at a substantially higher elevation. The capacity of the central pit is substantially less than that of the proposed project.

b. Black Eagle Pit

This alternative site was not analyzed in further detail because the Black Eagle Pit is closer to the ridge line that would make the landfill potentially visible from Joshua Tree National Monument. A potential exists that some precious metals deposits are located adjacent to the Black Eagle Pit. Using this alternative could preclude mining these resources and could represent a significant impact.

3. Waste Diversion Programs

While waste diversion programs reduce the waste stream by diverting waste from landfills and potentially reduce the environmental impacts associated with landfills, they would not eliminate the need for new or expanded landfills in southern California. Therefore, waste diversion programs were considered but eliminated from detailed analysis. Nevertheless, the discussion of impacts related to the implementation of waste diversion technologies is included in this draft EIS/EIR to respond to comments received on the Notice of Preparation. The programs included herein for informational purposes are recycling, green waste composting, and waste reduction.

Although waste-to-energy (thermal combustion) is also a technically feasible means to avoid impacts associated with landfilling, an assessment of this technology is not included, since it

is not anticipated to reduce air quality impacts to levels of insignificance. This conclusion is based on a comparison between the proposed project and the San Diego Energy Recovery (SANDER) Project (Signal Environmental Systems, Inc. 1985). The SANDER project, which was to recycle 2,250 tpd of municipal solid waste, was anticipated to generate 2,600 tons per year (tpy) of nitrogen and sulfur oxides (NOx and SOx), and 24,000 tpy of total suspended particulates (TSP) after mitigation. The proposed Eagle Mountain landfill, with an inflow capacity of 20,000 tpd of municipal solid waste (8.8 times more than the SANDER project) would generate 22,880 tpy of SOx and of NOx and 211,200 tpy of TSP. Given that the Environmental Protection Agency (EPA) threshold emission levels are 40 tpy for NOx and SOx and 25 tpy for TSP, the emissions resulting from a waste-to-energy operation at the Eagle Mountain landfill would represent a substantial and significant air quality impact.

a. Recycling

The Eagle Mountain project would include the use of transfer stations/materials recovery facilities to support recycling programs. Although the size and locations of these facilities have not been identified, the project applicant intends to dispose of primarily nonrecyclable solid wastes. An area at the project site has been designated for the storage of recyclables removed from the solid waste stream at the MRF.

Recently enacted state legislation (AB 939) establishes goals to divert 25 percent of the solid waste from landfills by 1995 and to divert 50 percent by the year 2000 through recycling and waste reduction programs. These recycling goals include yard wastes that can be composted (see following section). Under this legislation, cities and counties are responsible for developing integrated solid waste management plans to achieve these goals by 1992. This legislation does not prescribe methods to achieve these goals or require that certain types of wastes be recycled. The City of Los Angeles has recently adopted an ordinance which requires the diversion of recyclable municipal materials. This ordinance, however, does not include industrial or high density residential waste.

The implementation of recycling programs to achieve these goals would result in two types of impacts: (1) those related to the operation of landfills and (2) those related to the collection, recovery, and reuse of municipal solid waste.

Impacts Related to the Operation of Landfills

The major impact related to landfills would be to conserve available landfill capacity and reduce the need to site new land disposal facilities. Assuming achievement of the legislative goals, the need for new or expanded landfill facilities would be approximately half of the anticipated capacity shortfall in Los Angeles County. Under these circumstances, the landfill capacity shortfall would still be large enough to require a project of the magnitude of Eagle Mountain

or a number of smaller projects with the same combined inflow (20,000 tons per day) as the project.

Public safety impacts related to landfills such as LFG migration; condensate and leachate treatment and disposal; and surface, subsurface, and right-of-way fires are not encountered in recycling and recovery operations. Recycling operations, however, involve some of the same public safety impacts as the project (e.g., the presence of hazardous materials in solid waste, vectors, smoldering loads). Similarly, assuming that these recycling facilities are located either in existing industrial areas or at existing landfills, they are less likely to involve the loss of biological and cultural resources than may occur in conjunction with the use of undeveloped areas for land disposal facilities.

Impacts Related to the Collection, Recovery, and Reuse of Municipal Solid Waste

A number of impacts related to recycling would depend upon the location of new facilities. It has been suggested, for example, that existing landfills be used as the site of recycling/recovery facilities. Under these circumstances, the distance between collection routes and recycling facilities would be similar to the current distance between collection routes and disposal facilities. As developed (disturbed) sites, processing and transfer stations at existing landfills are not anticipated to result in the loss of significant cultural and biological resources. If recycling facilities are located within existing urban/industrial areas closer to where waste is generated, the vehicular impacts of transporting waste to these facilities may be somewhat less than occurs under existing conditions. Land use, visual and aesthetic resources, local traffic, surface runoff, and a variety of other impacts would all depend on the location of these facilities.

As new recycling programs are implemented over the life of the project, this form of waste diversion may lead to significant changes in waste collection methods and vehicular impacts related to the transportation of solid wastes. Impacts would vary in terms of whether waste is hauled and separated at processing and transfer stations, whether recycling programs utilize drop-off centers or provide curbside service, whether curbside service is provided by vehicles which compartmentalize recyclable and disposable wastes, or whether recyclable wastes are collected in separate vehicles. The manner in which waste is transported to processing and transfer stations (whether waste is separated and collected at the curb or whether it is separated and sorted at the processing and transfer stations) would, in turn, affect impacts related to the operation of these facilities.

Related to both the operation of landfills and the collection, recovery, and reuse of municipal solid waste is the uncertainty regarding the volumes and types of wastes to be recycled which makes it speculative to estimate the effects of recycling on LFG production and the moisture content of waste at the project site or other landfills. The effect of recycling on gas production and moisture would, in turn, affect air emissions and the potential generation of leachate.

b. Yard Waste Composting

Estimated at approximately 30 percent (by weight) of the residential waste generated in the city of Los Angeles, the diversion of yard waste from landfills is viewed as critical in meeting the recycling goals of the state legislation noted above. Although there is great potential use of yard waste compost, markets do not exist for this material. Except as noted below, the development of yard waste composting facilities involves many of the same impacts identified in conjunction with recycling facilities.

The utilization of yard debris compost and mulch represents a form of recycling that requires a larger processing facility than is necessary for the recovery of other types of municipal solid waste. Although it is conceivable that yard waste composting could be conducted indoors, the use of outdoor facilities raises environmental issues related to odors and visual impacts. Noise impacts related to the use of equipment to support composting operations (chippers, grinders, etc.) may also be of concern. The significance of these impacts can only be determined in the context of site-specific situations.

c. Source Reduction

Source reduction generally refers to measures which reduce the amount or types of municipal solid waste generated. For example, source reduction related to yard waste composting may involve landscaping for low-water-use requirements or home mulching. Another potential source reduction measure would be to ban nonbiodegradable plastic bags and wrapping materials. By definition, these measures would reduce the overall demand for waste management facilities. Different types of source reduction measures may be appropriate for commercial, industrial, and single- and multi-family residential use.

Potentially, source reduction measures would have a number of impacts:

1) As with recycling, source reduction would conserve available landfill capacity.

2) Source reduction would reduce all vehicular impacts (traffic, air, energy, noise) related to the transportation of wastes to recovery and/or disposal facilities.

3) Source reduction would result in a reduction in the scale of operations and environmental impacts associated with the use of equipment at waste collection, transfer, and disposal facilities.

4) Source reduction may result in increased air emissions and noise depending on the equipment used (small chippers). Relative to all other waste disposal/diversion options, however, source reduction would result in the least adverse environmental impacts.

The major question related to source reduction is how effective it would be in reducing the amount of waste generated. The City of Los Angeles Recycling Implementation Plan estimates that between five and eight percent of all yard debris generated could be reduced at the source by the end of the City's five-year program. In terms of volume, this type of source reduction is likely to be greater than the reduction of other types of solid wastes. Achieving this reduction, however, would require large-scale promotional and educational programs and possible ordinances directed at new commercial, industrial, and large residential projects.

III. Affected Environment

A. Water Quality and Use

The following discussion on water quality is based on information prepared by SCS Engineers in January and June 1990. The technical report may be found in Appendix C of this draft EIS/EIR.

1. Groundwater Quality

a. Geologic Setting

The Eagle Mountain site is located in the Colorado Desert physiographic province of California. The topography of this province is characterized by isolated, north/south-trending mountain ranges separated by broad, flat, alluvium-filled valleys.

The proposed landfill site lies at the eastern edge of the Eagle Mountains. This mountain range has elevations ranging from about 1,200 to 3,900 feet above mean sea level. This and other mountain ranges in the area surrounding the site (the Chuckwalla, Coxcomb, and Palen mountains) are made up predominantly of granitic rocks which are intruded into metamorphosed sedimentary rocks. The metamorphic rocks consist of marble, quartzite, schist, and minor gneiss.

Together with minor amounts of Quaternary (up to two million years in age) basaltic extrusive igneous rock, the granitic and metamorphic rocks make up the exposed consolidated rock in the area. Regionally, the older bedrock is cut by numerous inactive northwest/southeast-trending faults which dip nearly vertically. The fault planes exhibit narrow, slickensided, clay-bearing, and brecciated zones which may show extensive solutional activity (Dubois and Brummett 1968). In addition, well-developed joint systems are present in the Mesozoic and older rocks. These are discussed in greater detail below (Occurrences and Movement of Groundwater subsection) and in the Geology section.

Quaternary alluvial deposits are found above the bedrock. These deposits, consisting predominantly of sand and gravel with small amounts of silt and clay, fill the valleys and can reach considerable thickness. Drilling in the Chuckwalla Valley indicates that porous alluvial fill is at least 1,200 feet thick, extending three miles east of the front of the Eagle Mountains. Some Quaternary dune sand and lacustrine clay, silt, and sand are exposed in the central portions of the valleys. No evidence of faulting young enough to affect these deposits have been found in the proposed project area.

b. Areal Drainage

Drainage in the area basins is internal. Surface drainage is from the surrounding mountains into the Pinto and Chuckwalla Valley basins. In the immediate project area, drainage is from the Eagle Mountains easterly into the Chuckwalla Valley. A discussion of areal drainage appears in Section III.F., Surface Drainage and Flooding.

During and immediately after heavy rains, streams are formed within the Eagle Mountains and surrounding valleys. Streamflow within the Pinto Valley, north of the proposed landfill site, is predominantly easterly. Some surface water may flow from the Pinto Basin drain into the northwestern arm of the Chuckwalla Valley, which adjoins the proposed landfill site to the east. Drainage in the western part of the Chuckwalla Valley flows generally southeasterly towards Palen Dry Lake. Drainage from the eastern part of the Chuckwalla Valley is towards Ford Dry Lake. Streamflow within the project area is also discussed in the section on drainage existing conditions.

c. Groundwater Basins

Groundwater basins in the region include the Pinto Valley basin, which lies about four miles north of the proposed landfill site, and the Chuckwalla Valley basin, which adjoins the site on the east (Figure 41). These basins are composed mainly of Quaternary alluvium. The mountain areas adjoining these basins are underlain principally by older igneous and metamorphic rocks of low permeability and porosity, which do not readily yield groundwater to wells in usable quantities. The Pinto Valley and Chuckwalla Valley groundwater basins are considered to be coextensive with the Pinto Valley and Chuckwalla Valley drainage basins (see Figure 41). Basic hydrogeological data on these basins are summarized in Table 5.

Pinto Valley Basin

The Pinto Valley groundwater basin covers 310 square miles, most of which is within Joshua Tree National Monument. This groundwater basin is estimated to have a storage capacity of 230,000 acre-feet and a usable capacity of 130,000 acre-feet (State of California 1975). Groundwater from this basin has only very limited uses at present. Kaiser Steel pumped between 2,300 and 3,900 acre-feet of water per year from two wells (Pinto wells) between the years 1962 and 1982. These wells are located one-half mile northwest of the point where the Pinto Valley joins the Chuckwalla Valley (Mann 1967).

The most complete description of the hydrogeology of the Pinto Valley groundwater basin to date is found in Kunkel (1963). Groundwater flow in the basin is generally towards the eastern end of the valley, where it proceeds southward into the Chuckwalla Valley. Water level in the northernmost of the Kaiser Pinto wells (Well No. 3S/15E-4K) was measured at approximately

SOURCE: SCS ENGINEERS

FIGURE 41. GROUND WATER BASINS IN THE EAGLE MOUNTAIN AREA

TABLE 5
SUMMARY OF HYDROGEOLOGICAL DATA ON LOCAL GROUNDWATER BASINS

Area of Basin (sq. mi.)	Depth to Groundwater (feet)	General Direction of Flow	Inflow to Basin	Underflow Out of Basin	Storage Capacity (acre-feet)
		PINTO VALLEY BASIN			
310	20-450	East	Precipitation	Chuckwalla Valley	230,000
		CHUCKWALLA VALLEY BASIN			
870	20-600	Southeast	Precipitation, Pinto Valley, Cadiz Valley, Orocopia Valley	Palo Verde Mesa	9,100,000

122 feet below ground surface on September 11, 1989 (approximate elevation 936 feet above MSL).

Water quality data from the Pinto Valley groundwater basin wells is summarized in Table 6. The water in this basin can be characterized as having total dissolved solids (TDS) content averaging about 600 milligrams per liter (mg/l) and relatively high levels of sodium and sulfate. Sodium, bicarbonate, chloride, sulfate, and fluoride average about 200, 90, 100, 240, and 2 mg/l, respectively.

Chuckwalla Valley Basin

The Chuckwalla Valley groundwater basin is an 870-square-mile basin with internal drainage. It consists of a broad, alluviated valley bounded on the south by the Orocopia, Chuckwalla, Little Chuckwalla, and Mule mountains. It is bounded on the west by the Eagle Mountains and on the east by the Mule and McCoy mountains. Several northerly trending mountain ranges (the Coxcomb, Granite, Palen, and Little Maria mountains) bound the valley to the north and extend into the valley. The intervening valleys are contiguous with and tributary to the main part of Chuckwalla Valley (Giessner 1963).

There are no perennial streams or any permanent natural bodies of water in the Chuckwalla Valley. During heavy rains, some precipitation runoff may flow into sinks at Palen and Ford dry lakes and standing water may occur at these lakes for a short time.

Subsurface flow into the Chuckwalla Valley is from three sources: the Pinto Valley to the northwest, the Hayfield Basin to the west, and the Cadiz Valley to the north. Mann (1986) estimates inflows of 2,500 acre-feet of water per year from the Pinto Basin, if none is intercepted by wells (as is the case at present); 1,700 acre-feet per year from the Hayfield Basin; and an unknown amount from the Cadiz Valley. The northwestern Chuckwalla Valley is replenished by groundwater inflow from the Pinto Basin and runoff from the slopes of the mountains surrounding the valley. Except during heavy rainstorms, most of the rain falling directly on the valley floor is probably lost to evapotransporation and does not add materially to groundwater recharge. This is because the small amount of rainfall normally experienced evaporates rapidly in the arid climate or is used by plants before deep percolation can occur.

Subsurface flow in the Chuckwalla Valley is generally towards the east, with south to southwest flow in the northern arms of the valley. Water level elevations range from an estimated 800 feet above MSL at the boundary between Chuckwalla Valley and Pinto Basin to below 500 feet MSL in the airport area.

In the northwestern Chuckwalla Valley, groundwater is used beneficially for irrigation and for domestic and industrial uses. Groundwater quality in the basin ranges from fairly good to poor, with TDS ranging from 274 to 12,300 mg/l (State of California 1979). Koehler and Mallory

TABLE 6
PINTO BASIN WATER QUALITY DATA

Well	KS Pinto 1	Park Serv. 2	KS Pinto 1,9	KS Pinto 1,9
Well #	3S/15E-4K1	3S/15E-4J	3S/15E-4K1+ 3S/15E-4K2	3S/15E-4K1+ 3S/15E-4K2
Date	2/11/56	12/5/54	11/30/57	1/6/83
pH	8.2	8.1	7.7	8.3
Electrical conductance	1,010		1,020	990
TDS	618	571	598	610
Calcium	10	14	11	16
Magnesium	0.7	0.7	2	0
Sodium	280	199	200	196
Potassium	3.2		3.5	5
Iron		0		0.03
Bicarbonate	118	77	102	85
Carbonate	0	8	0	0
Sulfate	216	245	216	234
Chloride	102	97	104	82
Nitrate	18		22	15
Fluoride	2		2.5	
Hardness	28	38	36	

NOTE: Analyses in mg/l except for electrical conductance (micromhos) and pH.

(1981) state that the average TDS content of wells used in their study is 2,100 mg/l. Water quality is generally better than this average in the western parts of the valley and becomes worse in wells further east, particularly those near Ford Dry Lake. Fluoride content ranges from about 1 to about 12 mg/l and is generally above federal drinking water standards; sulfate and sodium concentrations are relatively high as well.

d. Hydrogeologic Setting

The hydrogeologic units in the Chuckwalla Valley area include igneous and metamorphic rocks and unconsolidated sedimentary deposits. Igneous rocks are generally considered to be non-water-bearing, since they do not normally yield usable quantities of water to wells. The porosity of igneous and metamorphic rocks is very low; however, since much of the bedrock in the Eagle Mountains is fractured and is able to store water, connections between the fractures in bedrock may provide pathways for the movement of groundwater.

Because water is readily available from the alluvial deposits in the northwestern Chuckwalla Valley, few attempts have been made to drill water wells into bedrock. One exception is the Eagle Mountain School well (4S/14E-1M), which was drilled in late 1985 and completed in early 1986. In this well, alluvial deposits were encountered from 1,500 feet MSL to 1,300 feet MSL of the borehole and extended to the bedrock below. The well was completed to produce water from fractured bedrock, with perforations between 1,025 feet MSL to 751 feet MSL.

The unconsolidated and semiconsolidated sediments were deposited in a continental environment prior to two million years ago. Some of the sedimentary units penetrated by deep wells in the valley may be late Tertiary in age (2 million to 20 million years old). Many of the sediments were deposited in alluvial fan, stream channel, lake, or playa environments, though some were deposited as windblown sand. The majority of this material consists of alluvial sand and gravel, but some silts and clays were deposited as well, particularly in the central parts of the basin. Some of the alluvial material has been cemented by caliche.

In the northwestern Chuckwalla Valley, four sedimentary units of up to two million years in age are primarily encountered and include alluvial fan deposits, younger alluvium, older alluvium, and windblown sand. These units are described below.

The older alluvium is of Pleistocene age (11,000 to 2 million years ago) and consists of fine to coarse sand interbedded with gravel, silt, and lesser amounts of clay. Surface exposures of the older alluvium are limited, but the unit is extensive in the subsurface where thickness ranges to over 300 feet. This unit yields water readily to wells and is the most important aquifer in the area.

The fan deposits of the Pleistocene age consist of poorly sorted boulders, gravel, coarse to fine sand, silt, and a minor amount of clay. This unit is found most typically at the margins of the

valley, but fingers of alluvial fan deposits in the subsurface may extend out almost to the center of the valley. The fan deposits are generally above the water table and therefore do not form an important aquifer, although they are generally porous and permeable.

The younger alluvium, of Holocene age (present time to 11,000 years old), consists of gravel, sand, silt, and lesser amounts of clay. This unit is generally less than 25 feet in thickness and is above the water table in most areas. The unit is, however, porous and permeable. It is most extensively developed in the central valley.

A belt of windblown sand of Holocene age lies between the central axis of the valley and the Coxcomb Mountains in the northwestern Chuckwalla Valley area. This deposit ranges in thickness up to 25 feet and consists of medium- to fine-grained sand. This unit appears to be above the water table in all areas. However, similar units of Pleistocene age may exist in the subsurface and could yield water to wells.

e. Discharge of Water during Mining Operations

The proposed project was formerly the site of iron mining, ore processing, and ancillary operations, which took place between 1943 and 1983. Some of these former operations resulted in the discharge of industrial water which had the potential for affecting groundwater.

During mining operations at the Kaiser Eagle Mountain iron mine, wet waste rock (coarse tailing) was discharged from the ore processing plant on a heap south of and adjacent to the East Pit. Large quantities of water were used to transport fine tailing (sand to clay-sized particles) to the fine tailing basins located south of the East Pit.

The fine tailing basins cover a total area of approximately 540 acres. There are seven fine tailing basins, two of which never received tailing. Waste containment structures consist of berms or dikes constructed of alluvial material and crushed rock from mining operations. The berms are trapezoidal in cross section and range up to about 80 feet in height. The inner surfaces of the berms and the floor of four of the basins were lined with compacted low-permeability fine tailing material. This material limited the amount of water which could percolate into the soil underlying the basins.

Based on measurements made during the early 1970s, an average of about 2,600 acre-feet of water per year was discharged to the fine tailing basins. Normally, slightly over half of this water was pumped out of the basins and recycled to the process plant. An additional 25 percent was lost to evaporation and about 12 percent remained in the interstices between sediment grains. The remaining 12 percent may have percolated into the alluvial sediments below the tailing basins.

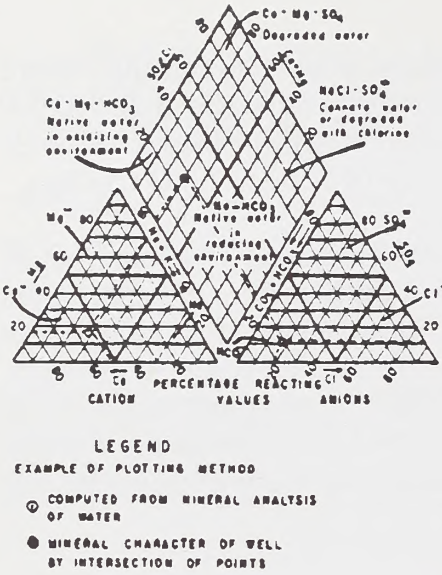
Coarse crushed tailing (<3/4 inch) was conveyed to the top of a heap which eventually covered approximately 120 acres and contained a volume of tailing roughly estimated at 38,000,000 cubic yards. It is not possible to estimate accurately the amount of water which was codisposed with the tailing in this area, but it is estimated to be in the range of 2,500 to 7,000 acre-feet.

In addition to water discharged with the tailing during ore processing operations, water encountered during mining operations in the central portion of the East Pit was pumped from this part of the pit and discharged into alluvium near the pit. Based on recollections of Kaiser Mine personnel, seepage of water into the central portion of the East Pit began in mid-1978, when mining operations at the 735-foot elevation encountered a near-vertical fracture zone. By early 1979, when the entire central portion of the pit had been excavated to the 735-foot level, wet areas had formed across the width of the pit. Subsequent blasting caused the wet areas to dry as the water infiltrated into the blast rubble.

By the first quarter of 1980, the pit bottom had been excavated to an elevation of 720 feet MSL. Water was flowing from several locations along the south wall of the pit. Water was pumped out of the central areas of the pit to a higher elevation in the eastern portion of the pit, where it was discharged onto the land surface and allowed to percolate into the alluvium. During the second quarter of 1980, an attempt was made to excavate to elevation 705 feet MSL, but activity in this part of the pit had to be abandoned because water was interfering with operations, and Kaiser declined to procure the additional pumping equipment required to remove the water. The water level in the pit subsequently rose to a maximum recorded elevation of 752 feet MSL in June of 1982.

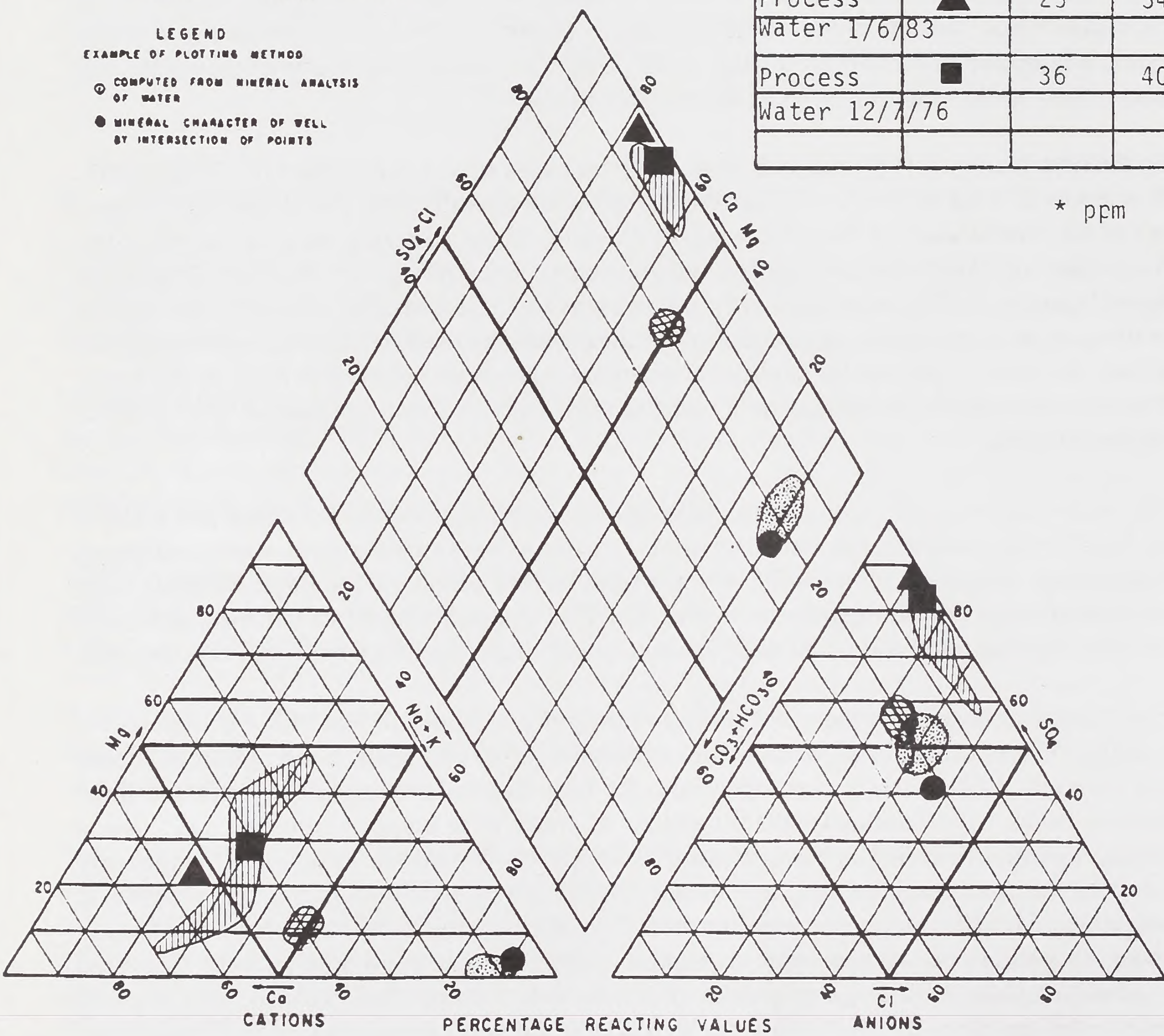
The water source for this seepage may have been from tailing stockpiles located just south of the East Pit or groundwater mounded up in this area due to local recharge from water codisposed with tailing. Major ion composition of water from several sources in the Eagle Mountain area are plotted on a trilinear diagram on Figure 42. This diagram indicates a chemical similarity between East Pit pond water and mine process water, rather than with well waters in the area.

Currently, the elevation of the water surface of the pond is about 710 feet MSL. This elevation is within 50 feet of that in all wells within a radius of 7,500 feet of the pond. During January and February 1990, water was pumped from the East Pit pond into a plastic membrane-lined holding basin. Approximately 40,000 gallons of water were pumped from the pond over a 10-day period. Pumping at rates of up to 100 gallons per minute resulted in temporarily lowering the pond water level up to 9 inches. After each episode of pumping, the water level was allowed to recover, and eventually reached its original elevation. Recharge rates of up to about 40 gallons per minute were measured. The fact that pond water levels recovered relatively rapidly after large quantities of water were pumped indicates the existence of substantial amounts of water stored in the fractured bedrock which makes up the sides and bottom of the pond (bank storage).



SAMPLES	SYMBOL	* $NO_3^=$	* TDS
Chuck.Wells		4 - 20	650-940
MW-1	●	20 - 28	500-560
Schl. Well		7 - 18	1000-1500
East Pit		69-470	1220-14,000
Process Water 1/6/83	▲	23	3420
Process Water 12/7/76	■	36	4040

* ppm



SOURCE: SCS ENGINEERS

FIGURE 42. TRILINEAR DIAGRAM, GROUND WATER AND PROCESS WATER QUALITY

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Water samples were taken before and after pumping, and samples were chemically analyzed. TDS of the water decreased from 14,000 to 4,700 mg/l, for a reduction to about one third in dissolved solids. This confirmed earlier evidence that water in the pond had become saltier with time, and the inference that the pond has been acting as an evaporative sink. Because of the large quantity of precipitated salts that exist in the soil in the vicinity of the pond from earlier evaporation, it is likely that the 4,700 mg/l measured for the pond water after pumping is higher than that of water stored in the fractured bedrock surrounding the pond, and results in part from dissolution of these precipitated salts.

In accordance with recommendations to the RWQCB contained in the Background Ground Water Quality Monitoring Program report (SCS Engineers 1990), groundwater monitoring is continuing at wells in the immediate vicinity of the East Pit. The purpose of this monitoring is to provide additional background data on local groundwater conditions.

f. Local Groundwater Basin

The local groundwater basin for this project is situated in the northwestern Chuckwalla Valley and adjacent upland areas. The principal aquifer in this area is the Pleistocene alluvium, which consists of fine to coarse sand interbedded with gravel, silt, and lesser amounts of clay (Giessner 1963). This unit is locally cemented with caliche. Well logs from the four Chuckwalla wells (4S/15E-10B, 4S/15E-2D, 4S/15E-2P, 4S/15E-11R) drilled by Kaiser Steel indicate that in this area (about five to six miles east-southeast of the project site), the sands and gravels of the older alluvium extend to a depth of about 300 to 450 feet below ground surface (Figure 43). Below this, the predominantly sand section gives way to clay and shale. Figure 43 also shows the absolute groundwater elevation for each of the wells.

Groundwater has been produced from the older alluvium in Chuckwalla Valley at Kaiser Chuckwalla Well Nos. 1 through 4. Water from these wells has been used for industrial purposes at the Eagle Mountain iron mine and is now being used for nondrinking domestic purposes at the town of Eagle Mountain. Pumping tests conducted at these wells following installation (1964 through 1977) indicate that the wells are capable of producing water at rates between 1,000 and 2,800 gallons per minute (Table 7).

Other geologic units in the northwestern Chuckwalla Valley are not important aquifers because they are either predominantly above the water table or do not consist of sufficiently permeable materials (see subsection c, Groundwater Basins, above).

The upland areas surrounding the valley are underlain principally by bedrock which consists of intrusive igneous and metamorphic rocks. Thin deposits of alluvium are found in stream courses within the uplands as well. The alluvial deposits are generally above the water table and therefore are not water-bearing. Some of the bedrock in the area contains groundwater held in fractures in the rock. It is known from drilling of water wells in other areas of the state

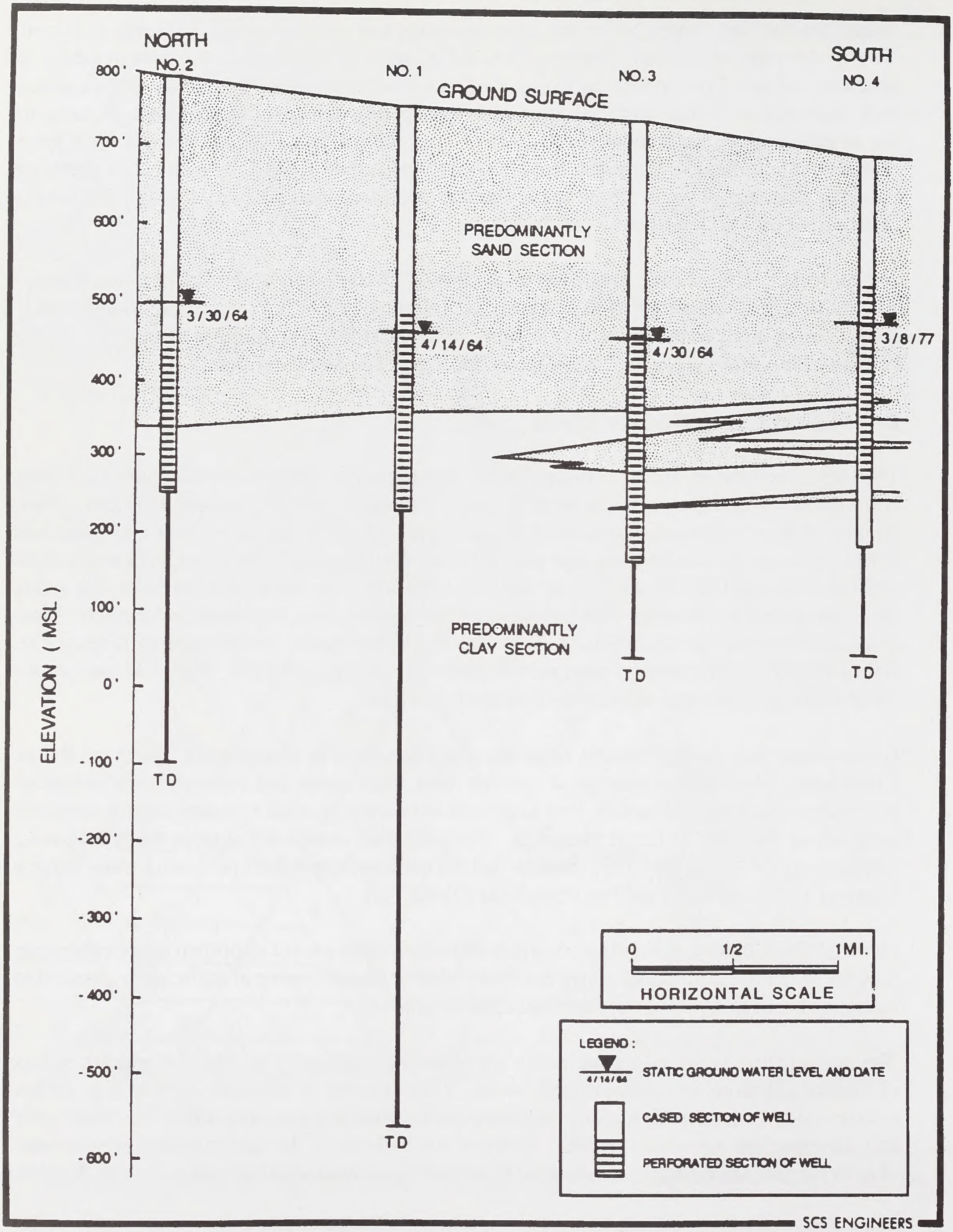

FIGURE 43. WELL LOGS OF KAISER CHUCKWALLA VALLEY WELLS

SOURCE: SCS ENGINEERS

TABLE 7
WELL TEST DATA
KAISER CHUCKWALLA WELLS

Well No.	Pump Rate (gal/min)	Drawdown (feet)	Well Diameter (inches)	Well Length Screened (feet)	Aquifer Interval Screened (feet)	Estimated Permeability (cm/sec)
CW-1* 4S/15E-10B	1,000	75	16	241	121	6.2×10^{-3}
CW-2 4S/15E-2D	2,400	78	16	196	116	1.5×10^{-2}
CW-3 4S/15E-2P	2,800	78	16	289	169	1.3×10^{-2}
CW-4 4S/15E-11R	1,150	32	16	240	180	1.2×10^{-2}

*This well has a tendency to produce sand along with water; as a result, this permeability is probably not as good an estimate of aquifer permeability as the other wells.

that even crystalline rocks (such as granites) can yield sufficient water to wells to provide a usable supply to one or more residences, if the rocks are highly fractured and the fractures are interconnected. In addition, the completion of the Eagle Mountain School well in the town of Eagle Mountain, in 1986, demonstrated that some fractured bedrock in the project area can yield usable quantities of water to wells.

The Eagle Mountain School well was drilled to a depth of 748 feet (Figure 44). This well is located about 2,000 feet south of the East Pit. Bedrock was encountered beginning at a depth of about 200 feet. The well was completed with the screened sections entirely within the bedrock portion of the hole from 475 to 740 feet. The static water level was at an elevation of 779 feet MSL shortly after the completion of the well in February 1985. This fractured bedrock section is capable of yielding water at a rate of 90 to 95 gallons per minute with the present 15-horsepower submersible pump. During testing after well construction, the well was pumped at a sustained rate of 75 gallons per minute for 24 hours, which resulted in a drawdown of 11 feet.

The water-bearing bedrock of this well is located beneath 200 feet of alluvium at the margin of the Chuckwalla Valley. The valley margin is where most groundwater recharge due to runoff is thought to occur. It is unknown whether bedrock within the area of the Eagle Mountains without alluvial cover would yield usable quantities of water over time. In this situation, recharge probably occurs at a very low rate due to the fact that there is little or no overlying alluvium to hold water derived from precipitation. The school well indicates, however, that in some areas the bedrock is fractured sufficiently to provide groundwater storage capacity and pathways for water to move.

g. Water Wells in Project Vicinity

To determine the points at which groundwater is withdrawn for use in the northwestern Chuckwalla Valley and their distances from the project site, a canvass of well locations was performed. Locations of known water wells within 10 miles of the project site are shown on Figure 45. Descriptive information on these wells is presented in Appendix C.

The nearest wells to the project site are the Eagle Mountain School discussed above and Monitoring Well Nos. 1, 2, and 3 (MW-1, MW-2, and MW-3). MW-1 (3S14E-36H) is located about 2,000 feet east of the East Pit. MW-1 was drilled and completed during April and May of 1989, at the direction of Mine Reclamation Corporation. The purpose of this well is to provide one of four groundwater monitoring points to determine background water quality in the vicinity of the project site. Quarterly water quality monitoring activities for the site are described in the subsection on background groundwater quality monitoring below.

MW-1 was drilled to a total depth of 400 feet through alluvium consisting of fine to coarse sand, gravel, silt, and a minor amount of clay. The log prepared by geologists at the site is also

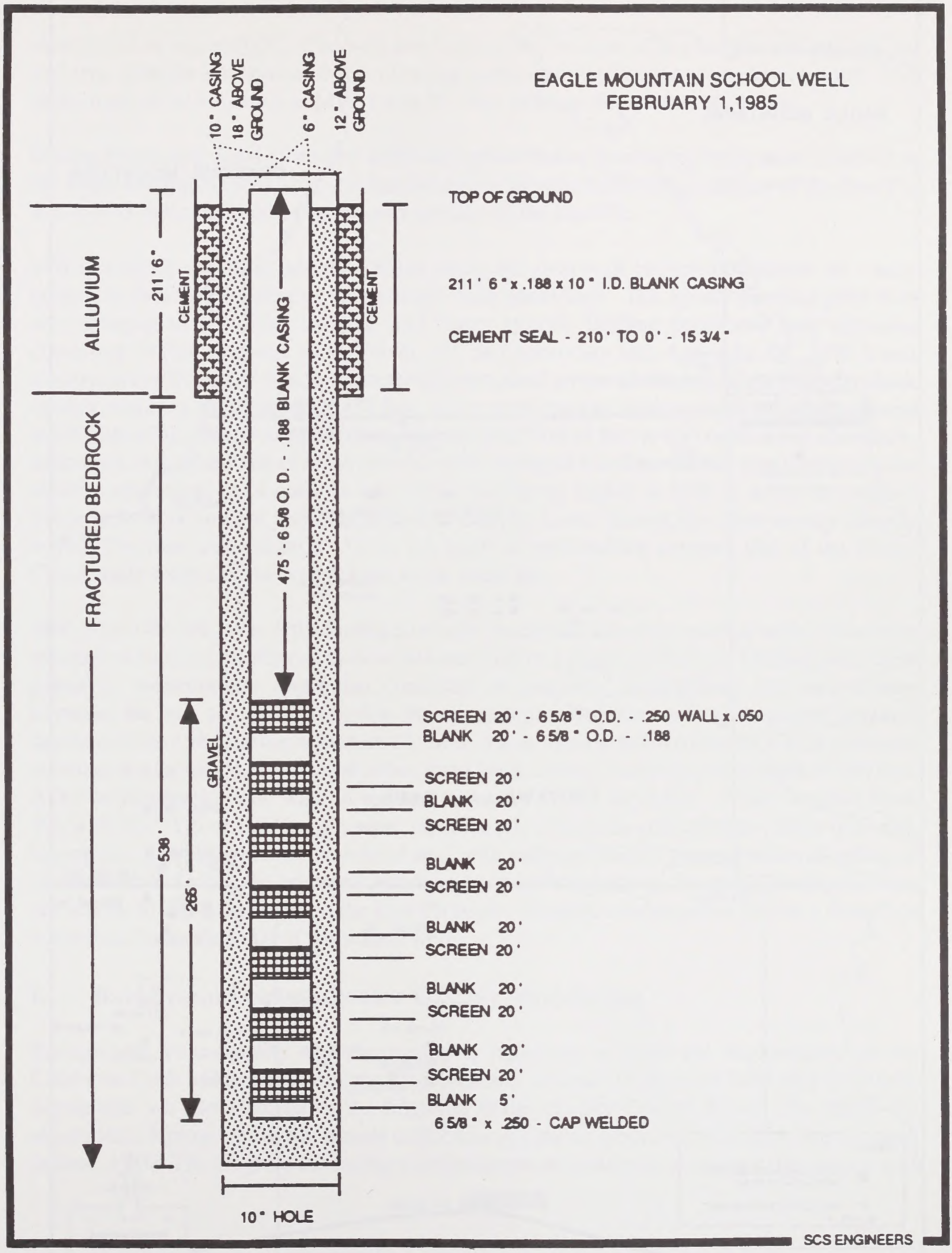

FIGURE 44. WELL LOG OF EAGLE MOUNTAIN SCHOOL WELL

SOURCE: SCS ENGINEERS

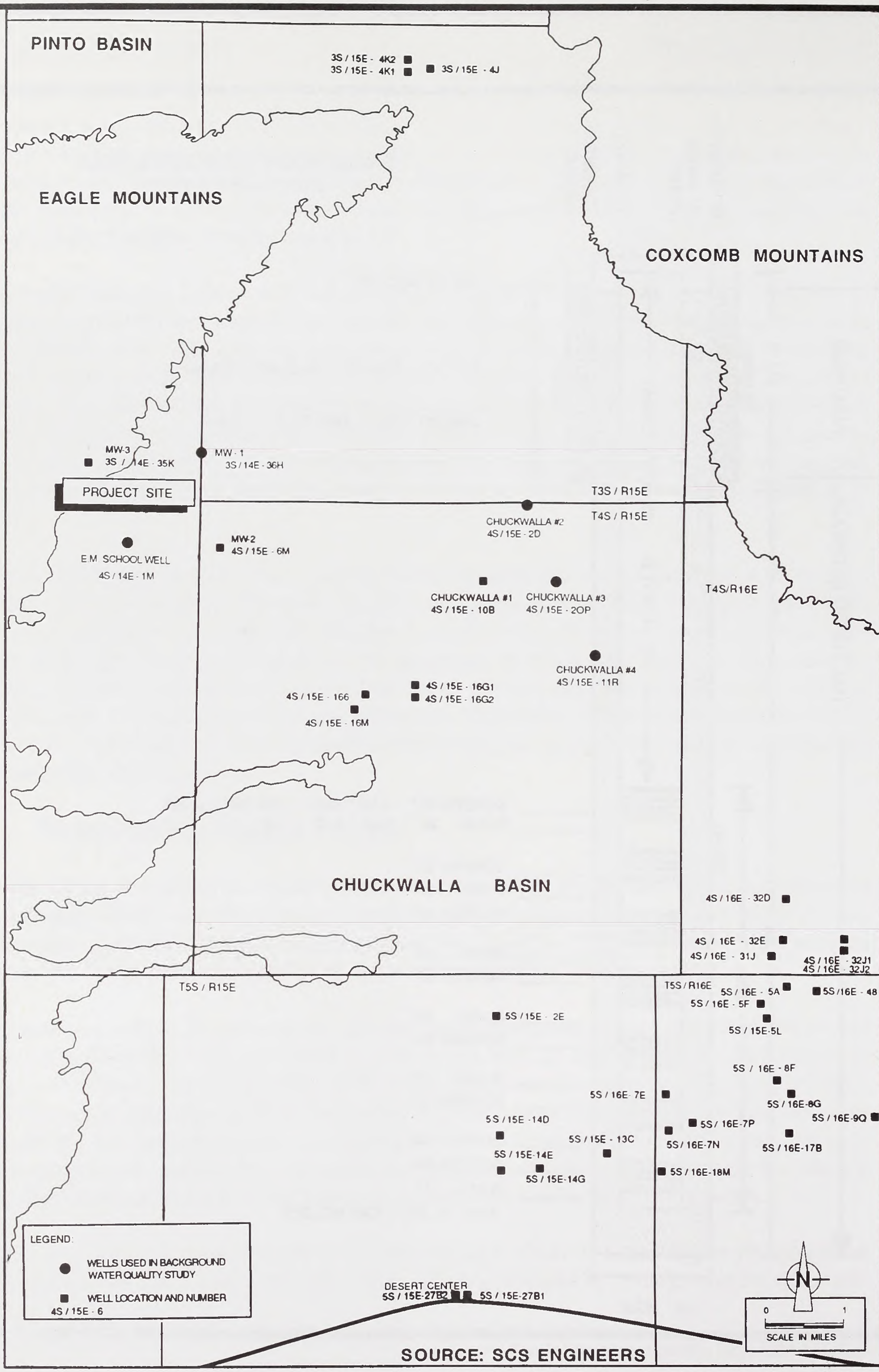

FIGURE 45. WELL LOCATIONS WITHIN 10 MILES OF THE PROJECT

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reproduced in Appendix C. The well was cased with five-inch-diameter Schedule 80 PVC to 385 feet, with the lowermost 60 feet of casing perforated (0.020-inch machine-cut slots). The static water level elevation at MW-1 was 717 feet MSL on September 26, 1989.

During March and April 1990, two additional groundwater monitoring wells were installed in the Eagle Mountain area. MW-2 is located approximately 5,000 feet southeast of the East Pit, and MW-3 is located within the western portion of the East Pit.

MW-2 (4S15E-6M) was initially drilled using the dual-wall reverse circulation air rotary method to facilitate logging of the geologic units penetrated. The 5-inch-diameter pilot hole was enlarged to 10 inches using a mud rotary system. Drilling penetrated only alluvium consisting of fine to coarse sand, gravel, silt, and some clay (see Appendix C). MW-2 was constructed of 61 feet of 4-inch-diameter stainless steel screen and stainless/ carbon steel blank casting, reaching a total depth of 455 feet. After development, static water level was measured at 693 feet MSL. Water sampled from this well had TDS of 860 to 930 mg/l; water chemistry, in general, resembled that of other alluvial wells (being of a sodium sulfate type), although the relative concentration of calcium and sulfate is slightly higher in MW-2, while the relative concentration of sodium and bicarbonate is slightly lower than in the other nearby alluvial wells. Fluoride concentration (3.2 to 4.6 mg/l) is intermediate between that of the Kaiser Chuckwalla wells and the wells closer to the mine site.

MW-3 (3514E-35L) was drilled using a reverse circulation air rotary method with a downhole percussion hammer, drilling an 8-inch-diameter hole to a depth of 380 feet. Drilling penetrated primarily metamorphic rocks that consisted of quartzite, meta-arkose, and calc-silicate hornfels; the iron ore which is within the metamorphic sequence was encountered between depths of 90 to 150 feet (see Appendix C). MW-3 was constructed of 61 feet of 4-inch-diameter stainless steel screen and stainless/carbon steel blank casing, reaching a total depth of 350 feet. After development, static water level was measured at 757 feet MSL. Water sampled from this well had TDS of 1,600 mg/l; water chemistry is of sodium and calcium sulfate type and, in general, resembles that of the school well, although the relative concentration of sulfate is higher in MW-3 while the relative concentration of sodium is lower. Proportions of major ions are similar to those measured in the East Pit pond. Fluoride concentration (0.7 to 1.6 mg/l) is somewhat lower than that of the school well.

h. Background Groundwater Quality Monitoring

Background water quality characterization is necessary to meet the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 15 (Section 2595 [g] [7]). These regulations are administered by the Regional Water Quality Control Board. To satisfy the regulations, a program for systematic collection of data on groundwater quality was initiated in June, 1989. The program for background groundwater quality monitoring in the project area

was based on that proposed in an October, 1988, report by SCS Engineers and approved by the Colorado River Regional Water Quality Control Board.

The monitoring program was designed to characterize groundwater quality in the vicinity of the project site. The proposal called for the drilling of two 400-foot-deep exploratory borings, one located about 2,000 feet east of the East Pit (downgradient) and one located about 3,000 feet southwest of the pit (upgradient). Two upgradient holes were subsequently drilled, one to 230 feet and one to 400 feet. Both of these holes, drilled in igneous and metamorphic bedrock, failed to encounter groundwater. One downgradient hole was drilled to 400 feet in alluvium and encountered groundwater at approximately 330 feet. This hole was completed as a monitoring well (MW-1) in May, 1989. The logs of these borings are shown in Appendix C.

Following the installation of MW-1, the background water quality monitoring program was instituted. The program consists of quarterly groundwater samplings for common dissolved groundwater constituents, heavy metals, and volatile organic compounds from the following downgradient wells:

1) Monitoring well MW-1 (3S/4E-36H), located approximately 2,000 feet east of the East Pit.

2) Eagle Mountain School well (4S/14E-IM), located approximately 4,000 feet south of the pit.

3) Kaiser Chuckwalla Well Nos. 2 (4S/15E-2D), 3 (4S/15E-2P), and 4 (4S/15E-11R), located approximately five miles east-southeast of the East Pit.

The locations of these wells are shown on Figure 45.

Water samples are tested for the following parameters:

1) pH, specific conductance (electrical conductance [EC]), and temperature in the field.

2) Volatile organic compounds by Environmental Protection Agency Method 524.2.

3) General minerals, including TDS, alkalinity, carbonate, bicarbonate, chloride, fluoride, sulfate, nitrate, calcium (Ca), copper (Cu), iron (Fe), manganese (Mn), magnesium (Mg), potassium (K), sodium (Na), and zinc (Zn).

4) Metals by atomic absorption or induction coupled plasma analysis, including antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), lead (Pb), mercury (Hg), molybdenum (Mo), nickel (Ni), selenium (Se), silver (Ag), thallium (Tl), and vanadium (V).

5) Other parameters, including chemical oxygen demand (COD), total organic carbon (TOC), total organic halides (TOX), ammonia, and cyanide.

Following four quarters of monitoring, the results of the data gathered were statistically analyzed and interpreted and a discussion of data included in a report submitted to the RWQCB.

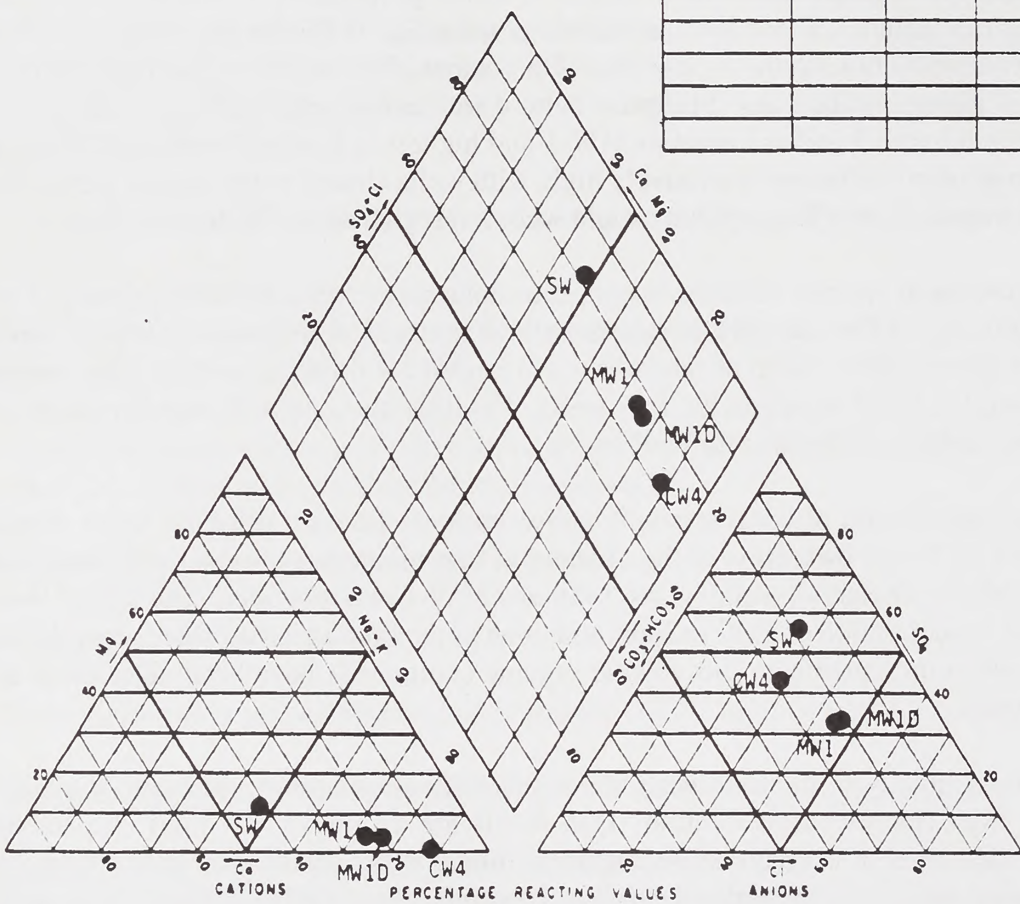
Wells were sampled in June, September, and December, 1989, and in March of 1990. Water quality data indicate that the groundwater is generally of the sodium sulfate type. Water quality from the two Kaiser Chuckwalla wells, located in geologically similar areas about two miles apart, are comparable. Major ion composition of water from MW-1 is similar to that of the Chuckwalla wells. Water from the Eagle Mountain School well is similar to that of the other wells in anionic composition, but contains a lower proportion of sodium and a greater proportion of calcium. These data are shown graphically on Figure 46, which indicates the major ion concentrations in the four wells. TDS content of the water ranges from 510 to 1,000 mg/l and is highest in the Eagle Mountain School well and lowest in MW-1. Laboratory pH ranges from 6.6 to 8.3; pH is lowest in MW-1 and highest in Kaiser Chuckwalla Well No. 4. Temperature of groundwater is relatively high, with wells closest to the project site averaging nearly 32 degrees C and Kaiser Chuckwalla wells averaging about 30 degrees C.

The only chemical species detected in concentrations greater than national primary drinking water standards was fluoride, which was above these limits in all wells except MW-1. Fluoride, whose presence renders much of this area's water unfit for drinking without prior treatment, ranged from 0.7 to 11 mg/kg in the four wells. Fluoride concentration was lowest in MW-1 and highest in Kaiser Chuckwalla Well No. 4.

No metals were found at concentrations above national primary drinking water standards. Measurable COD (an indication of the quantity of organic matter present) was found only in the Eagle Mountain School well in June 1989 and MW-1 in September. The school well had the highest concentration of TOC in June, and none of the four wells indicated any measurable organic carbon in September. No volatile organic compounds have been detected in any of the four wells.

Overall water quality in the four wells is not generally considered to be high. In addition to generally high fluoride concentration, TDS levels are all above 500 mg/l (the maximum recommended level in the national secondary drinking water standards). In addition, sulfate concentration equaled or exceeded the national secondary standard of 250 mg/l in all wells but MW-1 on both sampling dates and in Chuckwalla Well No. 4 in September 1989. Concentrations of iron and manganese were above national secondary drinking water standards in MW-1 in June and in both MW-1 and the school well in September. The laboratory results for these two chemical species may represent suspended sediment as well as dissolved iron and manganese.

Well	pH	Fl$^-$	TDS/TH
MW1	8.0	0.60	500/84
MW1D	8.1	0.68	520/94
SW	7.6	2.0	960/378
CW4	8.2	11.0	650/54



Wells sampled December 12 and 13, 1989.

SCS ENGINEERS

FIGURE 46. TRILINEAR DIAGRAM INDICATING RELATIVE CONCENTRATION OF MAJOR IONS AT MW-1, EAGLE MOUNTAIN SCHOOL WELL AND CHUCKWALLA WELL NUMBER 4

SOURCE: SCS ENGINEERS

i. Local Water Quality

To provide additional data on water quality in the local groundwater basin, a program was instituted for sampling and analyzing water from irrigation, domestic, and other water production wells in the northwestern Chuckwalla Valley. This program was first implemented during August, 1989. The data provide a supplement to background water quality data being obtained as described in the previous section.

Samples were taken from selected wells, with the well owner's permission, for general minerals analysis. To date, seven wells have been sampled. In addition, previous water quality analyses have been obtained from published and unpublished records of the California Department of Water Resources, the Lower Colorado River RWQCB, the Riverside County Department of Health, the U.S. Geological Survey (U.S.G.S.), Kaiser Steel Resources, and other sources. The previous water quality analyses and laboratory reports on recent water quality analyses have been reproduced in Appendix C.

Most untreated groundwater in the northwestern Chuckwalla Valley is of a quality which is satisfactory for irrigating the common types of crops grown locally and for domestic uses besides drinking. Locally, groundwater may contain levels of boron or sodium which are too high for irrigation of some crop species.

Groundwater from almost all areas of the northwestern Chuckwalla Valley contains fluoride concentrations which are above the national primary drinking water standards. These regulations specify a temperature-dependent maximum concentration of fluoride which is between 1.4 an 2.4 mg/l. This concentration is 1.4 mg/l for the air temperatures experienced in the Chuckwalla Valley. Nearly all wells in the northwestern Chuckwalla Valley yield water with greater than 1.4 mg/l of fluoride. Other dissolved constituents of the local groundwater, including trace elements, are generally below the maximum acceptable levels specified in the primary drinking water standards. However, groundwater quality in most of the northwestern Chuckwalla Valley is not suitable for drinking purposes without treatment to reduce fluoride concentrations. TDS concentrations, which were found to range from 430 to 1,100 mg/l in recent water analyses, average about 700 mg/l. Water with TDS concentrations between 500 and 1,000 mg/l is considered to be of lower quality for drinking than water with less than 500 mg/l TDS. The sulfate content of Chuckwalla Valley water is relatively high (average about 210 mg/l). Sulfate in water can impart a bitter taste, and for those not accustomed to drinking it, water high in sulfate salts can act as a laxative.

There are several differences in water chemistry between wells tapping the alluvial aquifer and those completed in bedrock aquifers. Water sampled from bedrock in the vicinity of the Eagle Mountain Mine has TDS concentrations generally above 950 mg/l, while alluvial water is generally below this level in the vicinity of the project site. Bedrock water tends to be proportionately higher in calcium, magnesium, and sulfate, and lower in sodium. Fluoride

concentrations tend to be lower in wells located near the mine area than in those located closer to the central axis of the northwestern Chuckwalla Valley. However, this does not differentiate bedrock from alluvial water. Temperatures of water produced from bedrock wells tend to be slightly higher than those of water from alluvial wells, although all groundwater from the northwestern Chuckwalla Valley is relatively high in temperature. The differences in water chemistry may indicate that the source of bedrock and alluvial water differs, and that there is only limited connection between groundwater from the two sources.

j. Occurrence and Movement of Groundwater

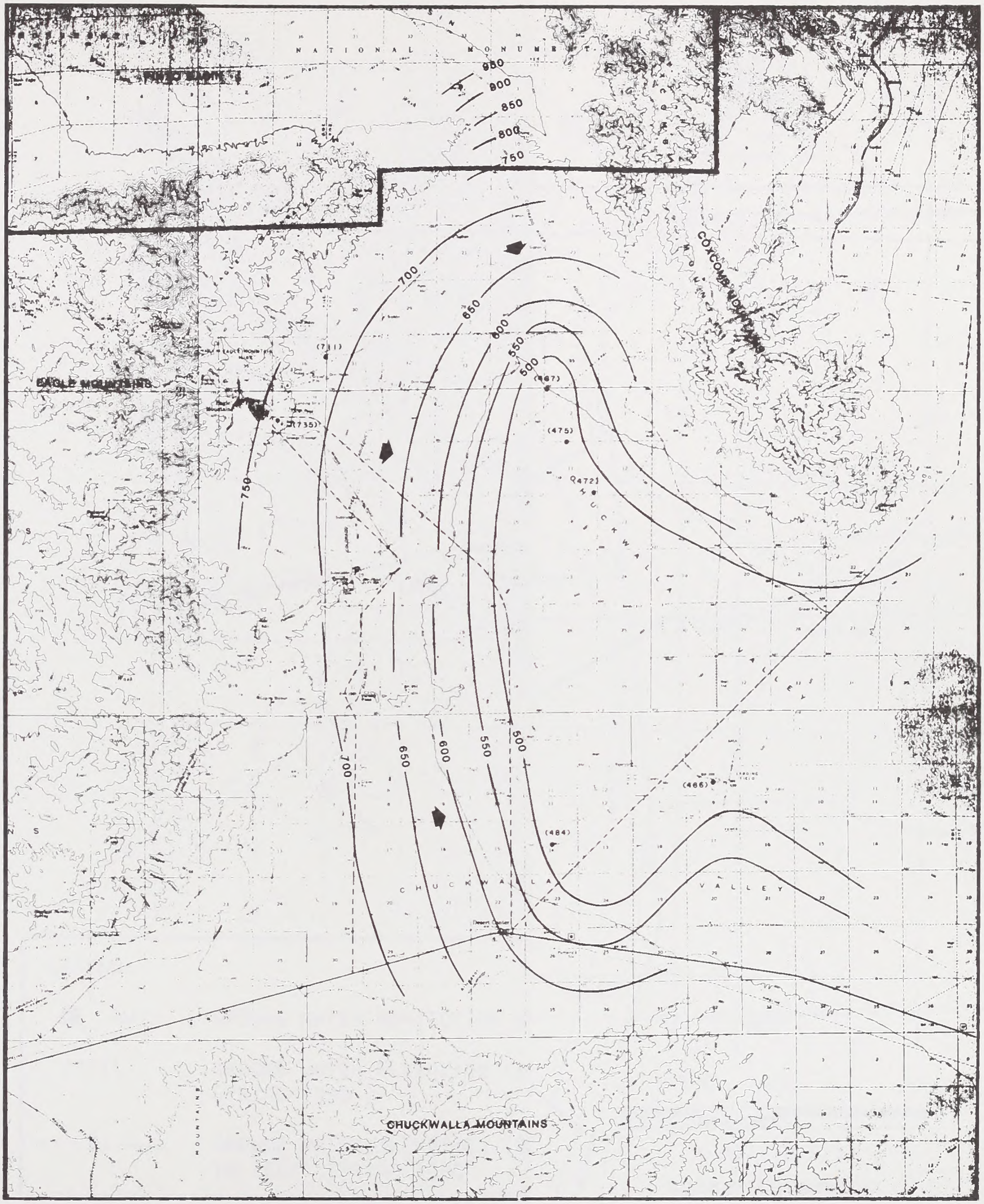
Depth to groundwater in the northwestern Chuckwalla Valley has been measured from about 500 feet below ground level in the Eagle Mountain School well south of the East Pit and to as shallow as 60 feet in the Desert Center Airport area. Water level elevations range from an estimated 800 feet MSL at the boundary between the Chuckwalla Valley and Pinto Basin to below 500 feet MSL in the airport area.

A regional contour map of the upper surface of groundwater is presented in Figure 47. Generalized groundwater flow directions are indicated on the map by arrows. Groundwater flow is generally from north-northwest to south-southeast within the valley. As one approaches the Desert Center area, flow direction shifts to a more easterly direction.

Based on water level elevations measured at groundwater monitoring wells and at the East Pit pond, a map of the groundwater surface can be drawn for the area near the East Pit (Figure 48). It appears that there is a depression in groundwater surface centered on the East Pit pond and a reversal of the generally eastward sloping regional groundwater surface to the east. Excavation of the central portion of the pit to a depth below the upper surface of the groundwater and groundwater discharge at this point is the most likely cause of the depression in the potentiometric surface. As a result of the depression, the groundwater surface slopes westward and groundwater flow is westward under portions of the eastern half of the pit.

Groundwater gradient is estimated from the map to average about 0.01 foot/foot in the area between the East Pit and the Kaiser Chuckwalla wells. Permeability (hydraulic conductivity) of the water-bearing valley alluvium is estimated to be 1×10^{-2} cm/sec from the grain size and textural characteristics of the sediment. Given this assumption, and the average groundwater gradient, average net velocity of water moving laterally through the alluvial aquifer can be calculated by multiplying the hydraulic conductivity by the gradient. The result is a velocity of 1×10^{-4} cm/sec, or about 100 feet (30 meters) per year. Actual velocity in the Eagle Mountain project area is probably less because of a locally flatter groundwater gradient.

Direction of groundwater movement within granitic and metamorphic bedrock beyond the immediate vicinity of the East Pit cannot be estimated accurately with data currently available, although it probably conforms approximately to surface drainage patterns. The permeability



SOURCE: SCS ENGINEERS

DIRECTION OF GROUND WATER FLOW

FIGURE 47. CONTOUR MAP INDICATING GROUNDWATER FLOW DIRECTION

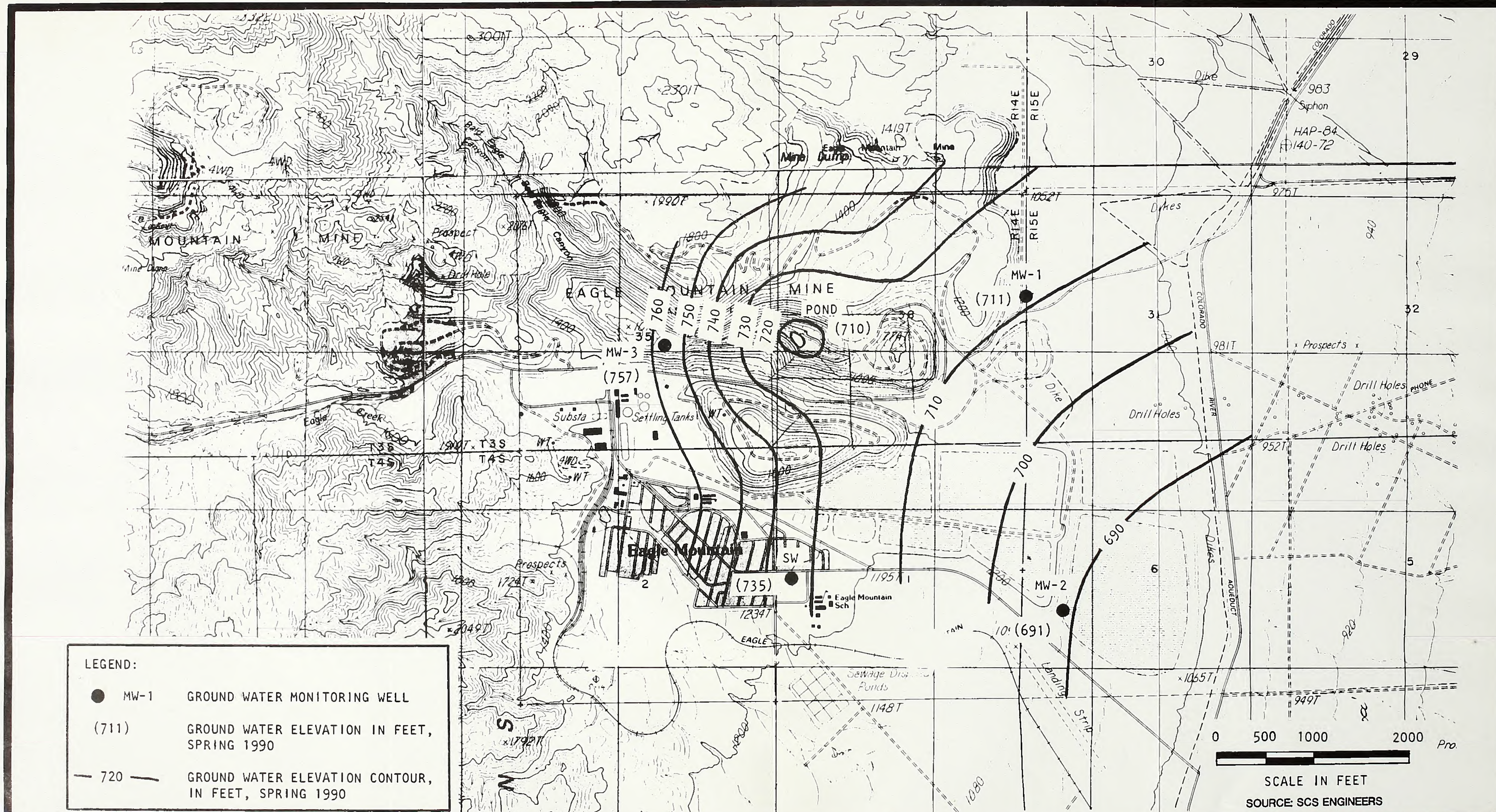


FIGURE 48. GROUNDWATER LEVEL ELEVATIONS, 1990

of the unfractured bedrock is very low (the bedrock underlying the East Pit ranges from 1×10^{-9} to 1×10^{-11} cm/sec based on lithology), and bedrock fractures most likely control the movement of water. Permeability has been estimated at 1.8×10^{-3} cm/sec for the Eagle Mountain School well, although this value seems too high to be representative of average bedrock permeability. Porosities of bedrock are difficult to estimate but are expected to be in the range of 1 to 10 percent or 1×10^{-6} cm/sec.

2. Surface Water Quality

Surface drainage in the area of the project site is generally towards the east. Drainage within the central portion of the northwest Chuckwalla Valley is towards the southeast, in the direction of Palen Dry Lake. Drainage is more completely described in the section of existing drainage conditions.

There are no permanent, natural bodies of surface water in the Chuckwalla Valley. Surface drainage of precipitation follows heavy rains, but after the cessation of rainfall, surface water generally disappears in a short period of time due to percolation and evaporation.

No year-round springs have been reported in the northwestern Chuckwalla Valley. A number of springs having intermittent flow do exist in the mountains which surround the northwestern Chuckwalla Valley. Information on these springs is summarized in Table 8.

One prominent artificial surface water body exists in the vicinity of the project site. This is the MWD Colorado River Aqueduct, which lies, at its nearest point, one mile east and one-quarter mile north of the East Pit. The MWD aqueduct is oriented approximately north-south in the area east of the project site; water flow is from north to south. From about one-quarter mile north of the East Pit to the MWD Eagle Mountain Pumping Plant (about four miles south of the project site), the aqueduct is covered.

Other surface water bodies within 10 miles of the proposed project site include holding ponds at the MWD Eagle Mountain pumping station, a small industrial pond at Eagle Mountain (not the wastewater facility), and the artificial lakes at the Lake Tamarisk community (located about nine miles southeast).

3. Groundwater Use and Water Supply

Water uses in the northwestern Chuckwalla Valley include domestic, agricultural, and industrial. The Kaiser Chuckwalla wells have, in the past, been used principally for industrial water supply. From 1973 to 1979 Kaiser pumped approximately 3,750 to 4,000 acre-feet per year from their Chuckwalla wells. In 1980 Kaiser's water use declined and only 3,245 acre-feet was pumped from the Chuckwalla wells. In 1981 as Kaiser business declined, water use from

TABLE 8
INFORMATION ON SPRINGS
NORTHWEST CHUCKWALLA VALLEY

Name/Location*	Elevation (feet)	Dry/Flowing
Eagle Tank 3S/13E-23	2,040	
Buzzard 4S/14E-16	2,010	Dry (3/88)
Unnamed 4S/14E-16	2,400	
Hayfield Summit 5S/14E-19	1,900	
Long Tank 6S/15E-2	1,190	Flowing (6/61)

*Location: Township/Range-Section.

these wells fell again to 3,006 acre-feet and in 1982 to 1,574 acre-feet. The Eagle Mountain School well was used previously for domestic water supply, although it is not being pumped at the present time.

Currently, MW-1, MW-2, and MW-3 are used only for groundwater quality monitoring. Most of the other water wells within 10 miles of the project site are used either for domestic or irrigation supply. One exception is the Southern California Gas Company (SCGC) well near the Desert Center Airport, which is used to supply cooling water for gas compression equipment.

Chuckwalla Valley groundwater use was the subject of a study by John Mann (1986). The study indicated that potential use of 23,000 acre-feet of groundwater from the northwestern Chuckwalla Valley during 1986 (Table 9). Mann's study showed that this rate of water use would result in an overdraft condition (more water being withdrawn than being added through recharge) for the groundwater basin. The greatest volume of water at this time was being used for irrigation.

Based on information in the Mann study, yearly inflow into the northwestern portion of the Chuckwalla Valley (area west of a north-south line between the southwestern tip of the Palen Mountains and the central Chuckwalla Mountains), is expected to consist of approximately (a) 2,500 acre-feet of underflow to the south from the Pinto Basin, (b) 1,700 acre-feet of underflow to the east from the Hayfield Basin, and (c) an unknown amount of underflow to the south from the Cadiz Basin. Based on the relative size of each basin, it is estimated that underflow from the Cadiz Basin should at least equal that from the Pinto Basin; it is estimated, therefore, that 2,500 acre-feet of underflow occurs yearly from the Cadiz Basin.

Mann also states it has been suggested that 5 to 10 percent of the rain falling on watersheds tributary to the Chuckwalla Valley contributes to the ground water in the basin. Conservatively estimating that 5 percent of the rain falling in the Chuckwalla Valley and surrounding drainage in an average year contributes to ground water replenishment, this amounts to 5,540 acre-feet of water annually. The total inflow to the basin is thus estimated at 12,240 acre-feet per year.

Since 1986, the acreage being used for agriculture has decreased, so that overall water use should not be greater than the amounts estimated in 1986. If it is conservatively assumed that overall water use has remained approximately constant since the time of Mann's study, this would suggest that the northwestern Chuckwalla Valley may still be in an overdraft condition of 10,760 acre-feet per year.

The Mann study also indicated that the water level in one well in an area of concentrated agricultural activity in the northwestern Chuckwalla Valley experienced a drop of 110 feet during a five-year period, beginning in 1981. More recent information from the SCGC indicates that the drop may actually have been closer to 130 feet. Most of the drop in the SCGC

TABLE 9
POTENTIAL 1986 WATER USE

Use	Rate	Acre-feet
Irrigated Crops		
Jojoba	4,005 acres @ 2.2 acre-feet/year	8,811
Jojoba with asparagus	457 acres @ 4.6 acre-feet/year	2,102
Asparagus	1,309 acres @ 8.3 acre-feet/year	10,865
Citrus	14 acres @ 4.5 acre-feet/year	63
Dates	14 acres @ 8.0 acre-feet/year	112
Vines	5 acres @ 4.5 acre-feet/year	23
Pasture	10 acres @ 6.4 acre-feet/year	64
Total		22,040
Tamarisk Lake development		865
Gas company		5
Miscellaneous domestic		50
TOTAL		22,960

well occurred between 1981 and 1985, when the water levels dropped by over 100 feet. Water in this well dropped only about five feet between 1986 and 1988.

There is an indication that water level change in the SCGC well since 1980 is not typical of the Chuckwalla Valley. Data on longer-term water level changes from Kaiser Chuckwalla Well Nos. 1, 2, and 3 indicates an average drop in water level of 1.6 feet per year between 1964 and 1989. There was, in fact, a net rise in water level of 1.5 feet per year in Chuckwalla Well No. 4 during the period of 1977 to 1989.

Estimates of the total usable water reserves in the Chuckwalla Valley vary. These reserves were estimated by Mann to be one million acre-feet, 100 feet of saturated sediments and a storage coefficient of 15 percent. It is not clear to which area the Mann estimate applies. A U.S.G.S. estimate for the entire Chuckwalla Valley is 15 million acre-feet assuming a 300-foot thickness and a 10 percent storage coefficient (Koehler and Mallory 1981; Skineman 1989).

Based on the relative proportion of total valley area located in the northwestern Chuckwalla Valley, this portion of the valley is assumed to contain 40 percent of total water reserves. This would indicate, using the U.S.G.S. estimate, that 6 million acre-feet of groundwater reserves were located in the northwestern Chuckwalla Valley.

B. Public Health and Safety

Generally, potential effects related to public health at landfills are common to all landfills. The following discussion is based on technical data and background information provided by SCS Engineers. This information is taken from conditions known generally to occur at landfills. It is important to note that these conditions do not exist currently on the site; however, they are issues related to the proposed landfill.

1. Hazardous Wastes in the Solid Waste Stream

Items such as nail polish, paint, cleaning products, insecticides, automotive and appliance batteries, aerosol cans, and other common household goods contain hazardous constituents which are not authorized for disposal at Class III nonhazardous solid waste landfills. Regulations exist at the federal and state level which control hazardous materials and wastes and prevent their improper disposal. State law and regulations (Chapter 15 of Division 3 of Title 23 of the California Code of Regulations) regulate the disposal of four types of wastes including hazardous waste, designated wastes, nonhazardous solid waste, and inert wastes. Because of these regulations, large quantities of hazardous materials and wastes are not typically found in the municipal solid waste stream.

This project will accept only nonhazardous solid waste and inert wastes. As defined in Chapter 15, nonhazardous solid waste consists of garbage, trash, refuse, paper, rubbish, industrial waste, ashes, appliances, food waste, and other materials provided that such wastes do not contain wastes which must be managed as hazardous waste or wastes with soluble pollutants in concentrations that exceed water quality objectives.

Most programs which sample and analyze solid waste are designed to identify the amount of recyclable material present or the energy content of combustible material. They are not designed to identify the presence or amount of hazardous wastes in the refuse. A few studies have been performed, however, which address this question. Monitoring programs at Los Angeles County landfills have confirmed the presence of unauthorized materials in nonhazardous domestic and commercial refuse.

In 1979, the Los Angeles County Sanitation Districts initiated a program which estimated the hazardous content of municipal wastes at the Mission Canyon Sanitary Landfill. Of the 29 household/commercial loads sampled, less than 0.2 percent (by weight) were found to be hazardous. A hand-sorting program conducted by the City of Los Angeles Bureau of Sanitation indicates the percentage of unauthorized materials in household refuse to be 0.3 percent (by weight). These measurements include the weight of the containers in which these materials were found. Results from the County's existing monitoring program, in effect since 1984 at the Puente Hills Landfill, show that the hazardous fraction of the total waste stream is less than

200 parts per million (0.02% by volume). It should be noted that this program monitored refuse which did not pass through a materials recovery facility and no recycling occurred prior to the refuse being placed in the waste stream.

2. Landfill Gas and Landfill Gas Condensate

a. Landfill Gas

LFG is produced during the natural biological decomposition of organic material contained in deposited solid wastes. In a landfill environment, buried organic materials (such as paper wastes, yard debris, and food wastes) initially undergo aerobic decomposition. As oxygen contained in the refuse is depleted, anaerobic decomposition processes commence, usually within a few months of waste burial. The production of methane gas (a principal component of LFG) by methanogenic bacteria usually begins shortly thereafter and continues for many years. In addition to methane, the LFG which results from anaerobic decomposition contains carbon dioxide, residual amounts of nitrogen and oxygen, and other trace gases. The primary concerns associated with LFG are its potential explosive hazard, toxic gas constituents, and generation of LFG condensate.

Trace constituents that may be present in LFG include hydrogen sulfide, carbon monoxide, ammonia, and volatile organic compounds (VOCs) such as chlorinated, aromatic, and other hydrocarbons. These compounds are typically present in the raw gas stream in the parts per million or parts per billion by volume range. Whereas methane, carbon dioxide, and nitrogen are nontoxic, some of the trace LFG constituents can be extremely harmful, given sufficiently high concentration and long exposure.

The vicinity of the proposed landfill is primarily underlain by plutonic igneous and metamorphic bedrock. Fractures in the bedrock could provide a pathway for lateral gas migration. The two major sets of fractures in the East Pit trend approximately east/west and approximately north-northeast/south-southwest. If LFG were to migrate away from the landfill mass, it is expected that it would move through bedrock in the directions parallel to the fracture orientation. The easternmost portion of the East Pit is underlain by alluvium with relatively high permeability which could allow lateral migration should LFG escape from the landfill. Any structures in the area could trap potentially migrating LFG and its methane component causing an explosion hazard.

b. Landfill Gas Condensate

Gas extracted from a landfill is normally saturated with moisture. During collection, the landfill gas undergoes a temperature decline as it moves through pipes close to the ground surface, followed by compression prior to combustion. During these processes, the moisture condenses

and accumulates at low spots in the collection pipes or in specially designed sumps. This accumulated moisture is known as LFG condensate.

LFG condensate is a two-phase liquid containing an aqueous phase and an organic phase. The organic phase often separates as a float. In general, the aqueous phase is mostly water with trace organic compounds. The organic phase, which typically comprises 1-5 percent (by volume) of the total mixture, consists primarily of hydrocarbons (organic sulfurs, halogens, benzene, toluene, and other organics with a molecular weight of less than 100), other compounds identified by the EPA as priority pollutants, and trace moisture (SCS Engineers 1987).

There is little published information on the chemical characteristics of condensate. One study (Briggs and McLaughlin 1988) presents the results of analyses of condensate samples obtained at four landfills with operating LFG recovery systems (two of which are located in California). The samples were analyzed for pesticides, polychlorobiphenyls (PCBs), and priority pollutant metal and organic compounds. No pesticides, PCBs, or priority metals were detected in the samples.

c. Applicable Regulations

Subtitle D of the Resource Conservation and Recovery Act (RCRA), and its regulations in 40 CFR 258, currently being drafted by the EPA, is to assist the states in developing environmentally sound methods for virtually all aspects of solid waste disposal, including LFG control. In its currently proposed form, the revised Subtitle D contains guidelines for landfill owners/operators to monitor LFG migration and air emissions and to develop contingency action plans should monitoring results indicate potential hazards. These provisions generally follow regulations already in effect in California (discussed below).

Regulations published for Subtitle C of RCRA (40 CFR 261) require that LFG condensate or leachate be treated as a hazardous waste if they exhibit specific criteria for ignitability, corrosivity, reactivity, or toxicity. If determined to be hazardous, they must be managed in accordance with regulations governing hazardous wastes (40 CFR 264). That is, tanks or sumps used to collect the material must be designed and operated to accommodate secondary containment, spill prevention, overfill, and corrosion protection. Aqueous, nonhazardous components of LFG condensate or leachate need not be handled as hazardous wastes.

Title 14, Division 7, Chapter 3, of the CCR (State Minimum Standards for Solid Waste Disposal) is enforced by the California Integrated Waste Management Board and its designated Local Enforcement Agency. In Riverside County, the LEA for landfill compliance is the County Department of Health. The Minimum Standards control most aspects of the design, operation, and closure of all landfills. Regarding LFG control, the Minimum Standards contain identical limits on subsurface and facility structure methane concentrations as embodied in RCRA Subtitle D.

Title 22 of the CCR contains the enforcement regulations which govern hazardous wastes. Division 4 of these regulations governs the classification and handling of hazardous wastes and, in some respects, is more stringent than the RCRA requirements noted above. Specifically, LFG condensate or leachate must be treated as a hazardous waste if they meet the specific criteria defined in RCRA; contain chemical constituents listed in the state regulations as being hazardous (e.g., benzene, toluene, and vinyl chloride); or exhibit certain toxicity criteria.

Title 23, Division 3, Chapter 15, of the CCR governs discharges of waste to land. These regulations have been established to preserve the quality of the state's surface and ground waters, particularly as they may be affected by waste disposal operations. They apply to the overall landfill operation and would be enforced by the Regional Water Quality Control Board.

Also at the state and local level, regulations exist which require the installation of LFG collection and control systems (not merely monitoring and a contingency plan as in federal regulations). This procedure is required in Rule 1150.1 of the South Coast Air Quality Management District and is discussed in detail in Section B.4., Air Quality.

3. Fires

Fires at the landfill surface are caused when combustible refuse, vegetation, and/or litter become ignited from any of the following sources:

a. The tipping of hot or smoldering loads, or loads that may contain hot cinders buried in the waste.

b. Sparks from vehicle or machinery exhaust, mufflers, and brakes.

c. Lighted cigarettes or matches.

d. Lightning.

In conventional solid waste transit, hot or smoldering loads may contribute to the combustion of containerized refuse, leading to a "hot box" effect. Other potential sources of fires are petroleum products, solvents, and other materials that may be stored in the on-site facility used for the repair and maintenance of rolling stock.

The project site, rail right-of-way, and proposed access road are not located in hazardous fire areas, as designated in the Riverside County Comprehensive General Plan. The scarcity of vegetation on and adjacent to the project site and the lack of vegetation adjacent to the rail line and road limit the extent to which surface fires may spread as a result of project activities.

4. Vector and Disease Control

A vector is defined as any animal capable of carrying, transmitting, or causing disease or disrupting the normal enjoyment of life by adversely affecting the public health and well-being. One vector, common ravens, currently exist on the site. Other vectors associated with refuse disposal activities include rodents, flies, mosquitoes, and birds. The state Minimum Standards, Title 14, Chapter 3, of the California Code of Regulations include several requirements intended to minimize attraction and support of animals. These include direction that storage and collection of solid waste be accomplished in a manner that minimizes the propagation, harborage, or attraction of vectors (Sections 17312, 17331, and 17341). Transfer stations must be designed to minimize vectors (Section 17453); be cleaned daily (Section 17512); have wastes removed every 48 hours (Section 17513); have clean storage areas (Section 17520); and otherwise be operated in an appropriate manner (Section 17533)—all for the purpose of minimizing vectors. These measures are all intended to minimize the potential for vectors arriving at solid waste disposal sites.

For disposal sites themselves, similar requirements apply to their design (Section 17629) and compaction specifications to eliminate potential rodent harborage (Section 17677). The daily cover specification, applicable to all landfills receiving more than 50 tons per day, is the major vector control procedure. If not implemented, a very detailed protocol for the monitoring of insects and other vectors is required. In addition to the daily cover requirement, operators must take other steps to control vectors and birds (Section 17707).

5. Worker Safety

There are rules and regulations, as explained below, which are designed to safeguard the health and well-being of all workers at the project site. The working environment at all landfills poses some risks to workers. These risks involve potential exposure to small amounts of hazardous wastes they may have to remove from the refuse; risks of physical accidents with sharp objects in the solid waste or with equipment used to move containers, spread and compact refuse, and place cover material; and chronic exposure to areas with dust, odors, and noise levels which may cause discomfort or other health effects.

The 1970 Occupational Safety and Health Act (OSHA) requires that employers comply with the safety and health standards set by the act in order to provide each employee with a work site which is free from recognized hazards that are likely to cause death or serious injury. The Labor Department regulations dealing with OSHA are published in Title 29, Part 1910, of the *Code of Federal Regulations* under General Industry Standards. Additionally, 40 CFR 241 sets the Guidelines for the Land Disposal of Solid Wastes; Section 241.211 specifies safety requirements to protect the health and safety of personnel associated with the operation.

Title 14, CCR, Chapter 3 lists the Minimum Standards for solid waste handling and disposal within the state. Section 17342 deals specifically with equipment safety, stating that "vehicles and equipment used in the transport of garbage and rubbish shall be constructed and maintained in such a manner as to minimize the health and safety hazards to collection personnel and the public." Section 17670, addressing personnel health and safety, requires that "operating and maintenance personnel shall be required to wear and use approved safety equipment as determined necessary by the [Lead] Enforcement Agency," which is in this case the Riverside County Department of Health. Thus, enforceable regulations related to equipment safety would call for equipment-operator training and supervision, the wearing of seat belts while driving haul trucks, the use of horns and backup alarms, and the observance of parking procedures for unattended equipment, among others. Personal protection would involve first aid training, the wearing of protective footwear and eye goggles, the setting up of an emergency response plan/communications system as part of the operational plan for the landfill, and other standards related to shift rotation and measures to reduce such hazards as noise exposure.

Some aggregate and other rock products may be recovered from the project area. Thus, worker safety issues such as rockfalls, vehicle hauls, crushing, conveying, and other mining-related activities, which are covered by the Standards for Equipment Safety and for Personal Protection set by the 1977 Mine Safety and Health Act (MSHA), and which are listed in 30 CFR 57, would apply to any future mining operations.

6. Public Safety

The collection and transport of municipal solid waste is a very common occurrence in all neighborhoods, typically once per week. Refuse disposal trucks are occasionally involved in accidents that could result in spillage of solid waste material. A potential health and safety hazard could occur to the public if exposed to the refuse or associated vectors which may be attracted to the spillage area.

Except for service to the local area, the project does not involve the typical refuse disposal trucks for delivery of refuse to Eagle Mountain; it would rely primarily on trains and to a lesser extent on conventional semi-trailers to deliver solid waste to the landfill in standard intermodal transport containers. In this respect, the project is similar to a standard rail transport operation, rather than a refuse collection service.

Unlike many standard rail operations, however, the solid waste transported for the project would not be a hazardous material and would not be liquid or gaseous. Petroleum products, propane and other combustible gases, chlorine, ammonia, acids, and other hazardous materials and hazardous wastes are commonly transported throughout southern California every day. In the event of an accident, not only are these materials more hazardous than municipal solid waste, they can also flow or spread over a wider area surrounding the accident site. Thus, the

relative risks involved in transporting municipal solid waste are less than many other commonly transported materials.

As a general statement, the potential for accidents with trains is much less than for trucks. A comparison of accident rates, as shown in Table 10, confirms this fact. This is because trains operate within a controlled right-of-way, with automated gates and barriers at most major street crossings and in a system with better signaling and communication than traffic on the open highway or on city streets.

Although Eagle Mountain Mine has been in a state of suspended operations since 1982, associated facilities exist on-site including the East Pit mine and supporting railhead, truck roads, and a processing area. A few buildings remain adjacent to the ore processing area south of the pit. Kaiser Steel Resources maintains a management office at the Eagle Mountain townsite. The effects of continued disuse are discussed in Section IV.B. of this draft EIS/EIR.

TABLE 10
TRANSPORT ACCIDENT RATES BETWEEN 1982 AND 1986

Item	1982	1983	1984	1985	1986
Number of accidents[1]					
Rail freight	4,589	3,906	3,900	3,275	2,620
Truck freight	32,277	31,628	36,853	39,273	26,176
Volume of freight transported (billion ton-miles)[2,3]					
Rail freight	810	841	935	895	889
Truck freight	520	575	606	610	634
Accident rate (accidents/billion ton-mile)					
Rail freight	5.6	4.6	4.2	3.7	2.9
Truck freight	62.0	55.0	60.8	64.3	41.2

[1]SOURCE: U.S. Department of Transportation 1988.

[2]SOURCE: Transportation Policy Associates 1988.

[3]A ton-mile is the movement of one ton (2,000 pounds) of freight for a distance of one mile.

C. Traffic and Transportation

The following report is based on a technical study prepared for RECON by DKS Associates of Santa Ana, California, in February, 1990. The traffic technical report is included with this report as Appendix D.

Existing conditions along both the proposed rail routes to the site and on roadways in the vicinity of the project were assessed. The Eagle Mountain Railroad crosses or is adjacent to the offered lands. No rail or road rights-of-way occur on the selected or offered lands involved in the land exchange. Figure 49 shows the project location, rail lines and segments analyzed, and hypothetical transfer station locations used in the analysis.

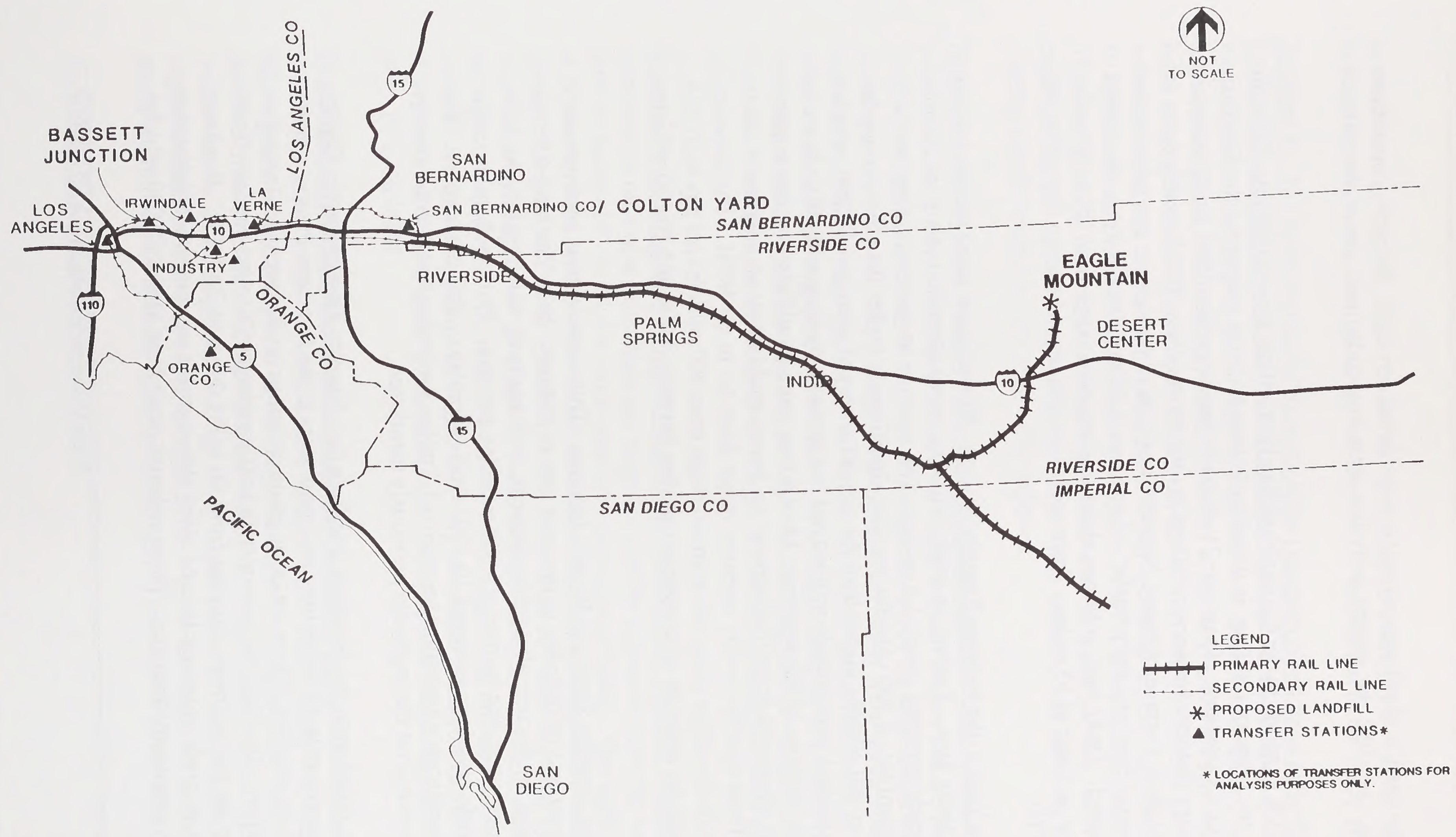
1. Rail Routes

The study area for the rail mode of transport includes all rail lines that may carry refuse from transfer stations to the site. For analysis purposes, a total of six possible locations for transfer stations were identified in San Bernardino, Los Angeles, and Orange counties.

A total of 268 miles of rail line was analyzed during the transportation study, with 231 at-grade crossings identified along their length, or an average of one at-grade crossing every 1.2 miles. The term "at-grade crossing" refers to any location where a rail line crosses a roadway facility without a grade separation (e.g., overpass or underpass), and the potential for conflicts between rail traffic and automobile/truck traffic exists. Data pertaining to rail and highway traffic volumes and crossing geometric conditions were obtained from a variety of sources, including the Southern Pacific Transportation Company, the California Public Utilities Commission (PUC), SCAG, Caltrans, and local city traffic surveys at over 97 percent of the crossings. Average daily train volumes ranged from 2 to 50 trains per day. The average daily volume of highway traffic using the at-grade crossings ranged from less than 1,000 vehicles daily to over 43,000 vehicles daily.

For the purposes of the analysis, it was assumed that all rail traffic would originate from points west of the project site, thus maximizing the potential effects on the circulation system to the west. The rail lines serving the various transfer stations assumed for this analysis were broken down into eight discrete segments (see Figure 49). The segments were identified based on locations of the transfer stations along the rail lines and key junction points where trains would be switched on or off a particular route. These segments are described briefly below.

<u>Segment 1A—Eagle Mountain to Ferrum Junction Right-of-Way</u>. This segment of rail extends from the Eagle Mountain Mine to Ferrum Junction. This privately owned rail line is approximately 52 miles long, 32 miles of which exist on a legislatively authorized right-of-way. Two at-grade crossings are identified along the length of this spur segment. The original



SOURCE: DKS ASSOCIATES, 1990

FIGURE 49. RAIL LINE SEGMENTS AND POSSIBLE TRANSFER STATION SITES

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right-of-way for this portion of rail was granted to provide rail service to the mining operations at Eagle Mountain. In 1982 the mining activities were suspended and use of the railroad discontinued.

Segment 1B—Ferrum Junction to the Colton Yard/San Bernardino Transfer Station. This rail segment, noted as the primary rail line, is 94 miles in length and is owned by the Southern Pacific Transportation Company. There are 31 at-grade crossings identified along this spur segment. The average distance between crossings is over three miles. This is nearly twice as high as the next highest average distance between at-grade crossings for the other seven segments. The average roadway daily traffic volume was 2,200 vehicles per day, the lowest of all segments studied. Daily train volumes along this segment range from 28 to 50 trains daily, with a median average of 35 trains. Train speeds on this segment range from 30 to 60 miles per hour (MPH).

Segment 2—Colton Yard to the Industry Transfer Station. This segment is the second longest section within the study area. Twenty at-grade crossings were identified along its 33-mile length, or one at-grade crossing every 1.6 miles. The average at-grade crossing roadway volume on this segment was 8,700 vehicles per day, significantly higher than the average for the previous segment and slightly higher than the overall observed average of 7,200 vehicles per day. This is the second most heavily utilized rail line in the study area, with 28 to 35 trains per day using various portions of this segment. Most refuse trains would also use this segment of rail line, although shipments from Irwindale or La Verne could travel an alternate route to the Colton Yard. Train speeds on this segment range from 60 to 65 MPH. The roadway volumes at the at-grade crossings along this segment range from 900 vehicles per day to 20,000 vehicles per day, with the majority of crossings carrying between 4,000 and 10,000 vehicles per day.

Segment 3—Industry Transfer Station to Bassett Junction. This segment runs approximately 11 miles, from the east end of Industry to the west end of Industry, near Vineland Avenue. Nine at-grade crossing are located along this segment, with roadway volumes ranging from less than 1,000 vehicles per day to over 28,000 vehicles per day. Daily vehicular traffic volumes at the at- grade crossings averaged 10,100 vehicles per day on this rail segment. The average distance between crossings on this segment is 1.2 miles, somewhat less than the average distance between crossings on the segments previously mentioned.

Segment 4—Bassett Junction to the Southern Pacific's Los Angeles Transportation Center. This segment is approximately 14 miles long and terminates at the Southern Pacific's major yard facility in East Los Angeles. There are 20 at-grade crossings on this segment, located an average of 0.7 mile apart. The daily volume of train traffic averages 28 trains per day. Train speeds begin to drop on this segment, ranging from 60 MPH down to 20 MPH. Roadway traffic volumes at the at-grade crossings located along this segment are somewhat higher that the roadway volumes previously discussed. These volumes range from a low of 2,000 vehicles

per day to over 30,000 vehicles per day at several crossings. The 14,100 vehicles per day average for at-grade crossings along this segment is the highest in the study area.

Segment 5—The Southern Pacific's Los Angeles Transportation Center to the Northern Orange County Transfer Station. A total of 50 at-grade crossings were identified along this 21-mile-long segment, resulting in an average of only 0.4 mile between crossings, the lowest of all segments studied. The roadway traffic volumes at the at-grade crossings are also relatively high, ranging from less than 1,000 vehicles per day to over 43,000 vehicles per day, the highest volume of roadway traffic in the study area. Train speeds along this segment range from just 10 MPH at the north end of the segment to a high of 20 MPH at the southern end of the segment. The average daily number of trains ranges from 4 to 30 trains per day, with most crossings experiencing 10 to 12 train crossings per day. Only trains to and from the northern Orange County transfer station would utilize this segment.

Segment 6—The Colton Yard to the La Verne Transfer Station. This segment of rail line could potentially serve shipments from both the La Verne transfer station and the Irwindale transfer station. There are a total of 74 at-grade crossings along this 30-mile length of rail line, or one crossing every 0.4 mile. The average vehicular traffic volume for at-grade crossings along this segment is 3,700 vehicles per day, well below the overall observed average. The number of trains traversing this segment is also below the average observed elsewhere in the study area. Only two to eight trains per day traverse the various at-grade crossings along this segment, with only two trains per day at most crossings. Train speeds range from 30 to 60 MPH on this segment.

Segment 7—The La Verne Transfer Station to the Irwindale Transfer Station. This segment of rail line is only nine miles long and might be used by shipments from the Irwindale transfer station (eastbound) or the La Verne transfer station (westbound). The traffic volumes at the at-grade crossings on this segment are lower than the overall study area average. The average along this segment is 3,000 vehicles per day, lower than any other segment except Segment 1. There are an average of two at-grade crossings per mile along this segment, ranking third among the segments analyzed. There are a total of 19 crossings along this nine-mile-long segment of railroad. Train traffic along this segment is very consistent, with an average of four trains per day reported at each of the at-grade crossings. Travel speeds on this segment of rail line range from 20 to 40 MPH.

Segment 8—The Irwindale Transfer Station to Bassett Junction. This is the final segment of railroad included in the Eagle Mountain transportation study. Only 4.5 miles long, usage of this segment would be similar to the usage described for Segments 6 and 7, with shipments possible from either the Irwindale transfer station or the La Verne transfer station. The average traffic volume at the at-grade crossings along this segment is 7,600 vehicles per day, slightly higher than the overall study area average. The at-grade crossings are an average of 0.6 mile apart, approximately half the study area average. Train traffic along this segment averages

four trains per day. Train speeds along this segment are limited to 20 MPH along the entire 4.5-mile-long segment.

An important concern of the public when assessing the impacts of increased train traffic is the delay to highway traffic when the train crosses an at-grade crossing. Under existing conditions, most crossings would experience relatively low delays during the passage of a refuse train. Vehicle delay is expressed as total vehicle hours of delay (VHD). This measure describes a cumulative amount of delay time experienced by each vehicle entering and leaving a crossing. It is a function of the length of time the crossing is blocked by a train, the average daily traffic at the crossing, the number of lanes, and the vehicle departure rate. One vehicle hour of delay is equivalent to 60 vehicles experiencing a delay of one minute at a grade crossing. The description of delays here and in the impact analysis focuses on the at-grade crossings located along the primary study segment (Segment 1) and includes all locations along other segments where a total of at least one-half hour of vehicle delay would occur under existing conditions during the passage of a typical refuse train. This is the equivalent of the delay at a minor signalized intersection serving 1,000 vehicles during a single peak hour, operating at Level of Service A (LOS A, i.e., excellent operating conditions), with only two seconds of delay for each vehicle.

Under the existing conditions along the primary segment, the total delay for all crossings caused by the passage of a single train with the proposed configuration of the unit trains traveling to the site would be 0.94 vehicle hour. Some of the freight trains currently operated by the Southern Pacific Transportation Company are longer than those proposed for the project and, thus, cause somewhat longer delays under the present conditions. The existing volume of train traffic along this segment (28–50 trains per day), thus, causes cumulative delays ranging up to about 50 vehicle hours per day. The number of vehicles delayed at a single crossing is approximately 12 vehicles, at Hunts Lane in Colton and at Monroe Street in Indio. In general, the existing per-vehicle delays are estimated to be on the order of one minute for each vehicle.

Total delays estimated for the Slauson Avenue crossing on Segment 5 average 1.7 minutes to each vehicle under the present conditions. Although the crossing is not the highest volume crossing in the study area, a combination of low train speeds and fairly high traffic volumes (averaging 28,300 vehicles per day) result in the highest overall delay of any crossing in the study area.

A relative hazard index has been calculated for each of the at-grade crossings on the primary rail segment and all secondary rail segment crossings included in the delay analysis. These locations are also likely to involve the greatest number of conflicts between trains and vehicular traffic. This index is intended to identify the relative estimated hazard among the approximately 100 crossings included in the analysis. It is not intended to specifically identify high or low probability of accidents, nor is it meant to predict rail/vehicular traffic accidents due to increases in train activity. The hazard rating index is calculated by multiplying the average 24-hour

traffic volume by the average 24-hour train volume, then multiplying by a protection factor which depends on the safety improvements at the crossing. The protection factor values are empirical coefficients that account for the reduction in potential hazard provided by various types of protective devices. Protection factor values are discussed on page 19 of the traffic appendix of this draft EIS/EIR and are as follows:

Protection Type	Factor
Crossbuck	1.00
Signs	1.00
Wigwag	0.34
Flashing light	0.20
Automatic gates	0.11

The highest ranking locations are found in Los Angeles and Orange counties, the more urbanized parts of the study area.

2. Truck Routes

Truck traffic to the site will be generated from a variety of areas. Due to the widespread wasteshed to be served by truck and the fact that exact transfer station locations are not yet identified, it is not possible to quantify all trucking-related impacts from point of origin to the Eagle Mountain landfill site. The Interstate 10 freeway is the first route where all truck trips to the site will converge and, therefore, is one major focus of the analysis. The other key routes included in the truck impact study area are Eagle Mountain Road, Kaiser Road, Desert Center Rice Road, and Ragsdale Road. These routes are currently being used by trucks delivering refuse to the County landfill on Kaiser Road. Figure 50 shows the existing daily traffic for each key route with a brief description of each route provided below. The traffic counts were taken during the month of November, 1989, except for the freeway volumes, which were counted by Caltrans in 1988. All volumes represent a 24-hour time period.

Interstate 10 Freeway. This freeway facility runs from the Los Angeles area through a portion of San Bernardino County into Riverside County and past the Eagle Mountain site. It is the major access route for all auto mobile and truck traffic originating at or destined to the project site. Near the site, I-10 has two lanes in each direction and carries an average daily traffic volume of 12,200 vehicles, with a peak-hour volume of 850 vehicles.

Eagle Mountain Road. Eagle Mountain Road would be the main surface roadway access route for truck traffic between I-10 and the project site. The road runs from south of I-10 to the Metropolitan Water District pumping station, located approximately seven miles north of the freeway. Except for that portion of roadway beneath the freeway overcrossing, Eagle Mountain Road up to the pumping station is a two-lane roadway with a 20-foot paved width. Existing traffic volumes on Eagle Mountain Road and its freeway interchange with I-10 are very low

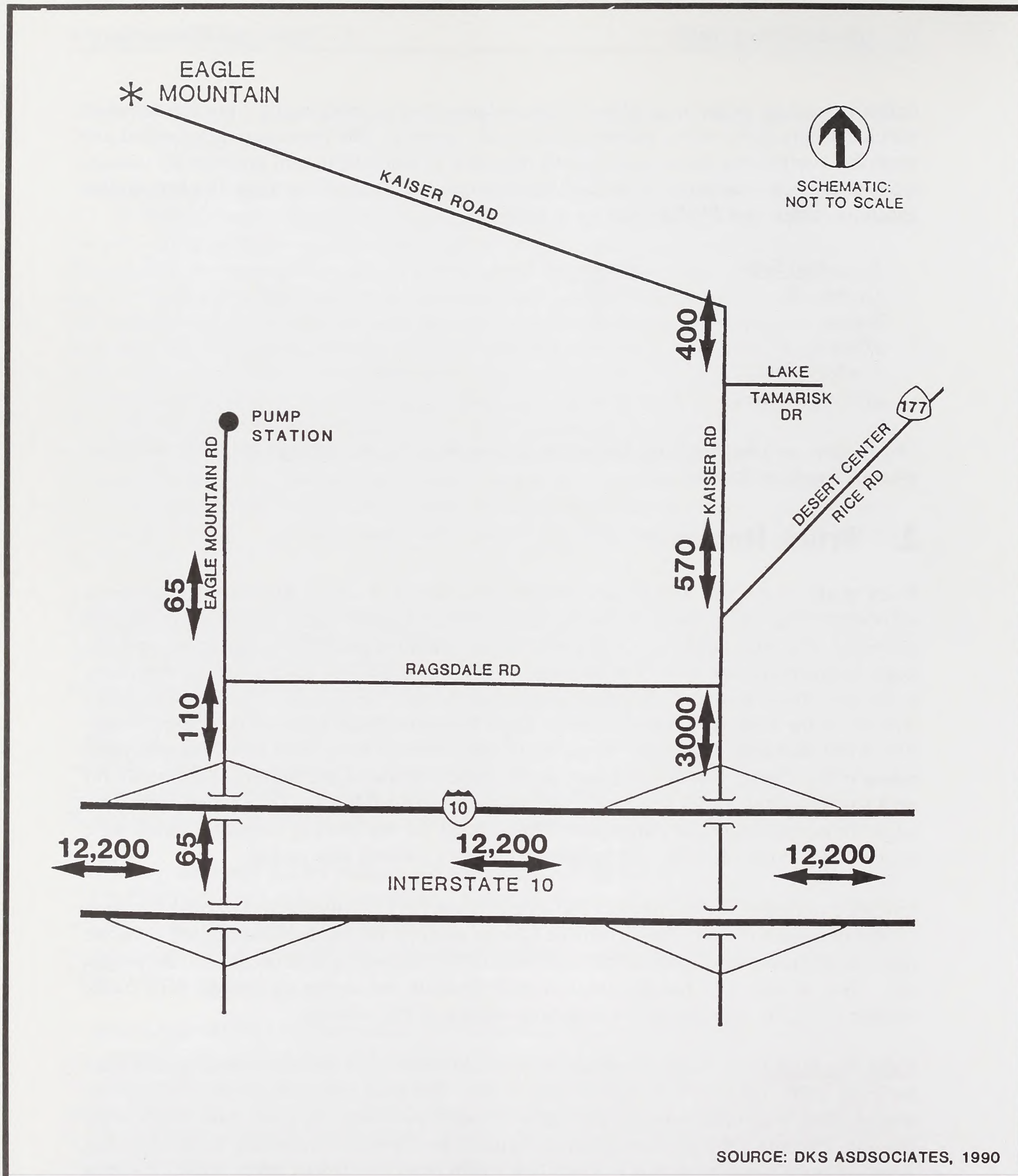

FIGURE 50. EXISTING AVERAGE DAILY TRAFFIC

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since the roadway primarily serves only traffic related to the pumping station. The average daily traffic volume on Eagle Mountain Road north of the freeway ramps is 110, while north of Ragsdale Road it drops to 65 vehicles.

The existing geometrics of the proposed truck route, from Eagle Mountain Road to just south the pumping station, are well-suited for use by the trucks that will be carrying refuse to the site. No evidence of deficient turning radii, horizontal and vertical alignment, or roadway widths was found along the proposed truck route. Analysis of existing intersection operations indicates that current intersection operations are excellent, with LOS A conditions for all traffic movements at each intersection analyzed.

Kaiser Truck Trail. The Kaiser Truck Trail right-of-way begins near the Metropolitan Water District's pumping station and travels northwest to the Eagle Mountain townsite. This 15- to 20-foot-wide segment, once paved, is presently in a state of disrepair. Portions of the pavement have been broken and washed away and are now covered with sand and other debris. Traffic is restricted to an occasional four-wheel-drive vehicle. The Kaiser Truck Trail right-of-way will be relinquished and the route will not be used for the project.

Eagle Mountain Road Extension. The proposed action includes an extension of the existing Eagle Mountain Road. As Figure 12 shows, the road right-of-way will extend from south of the MWD pumping station, approximately one mile northeast along the Kaiser Truck Trail alignment. Then the new road will travel northwest approximately 3,000 feet to where the Eagle Mountain Railroad diverges northwest away from the truck trail. At that point, the road will follow the rail alignment to near where it crosses the California Aqueduct. The new road will then head north to the existing main haul road at the mine site. This new right-of-way will pass through approximately one mile of undisturbed desert habitat and approximately one mile of disturbed tailing ponds.

Kaiser Road/Desert Center/Rice Road Interchange. Kaiser Road runs from the freeway north to the existing Eagle Mountain Mine site (approximately 11 miles from the freeway). Access to Kaiser Road from the freeway is provided by the Desert Center/Rice Road interchange. The average daily traffic volumes at the interchange and on Kaiser Road are considerably higher than Eagle Mountain Road due to traffic related to the services in Desert Center, the residential population of Lake Tamarisk (approximately 550 people), the operations at the Eagle Mountain site, and the existing school operations. Between Ragsdale Road and the freeway, Desert Center/Rice Road carries 3,050 vehicles per day. Kaiser Road between Desert Center/Rice Road and Lake Tamarisk Drive carries 570 vehicles per day and 400 vehicles per day north of Lake Tamarisk Drive.

Ragsdale Road. Ragsdale Road is a short, two-lane roadway which connects Eagle Mountain Road with Kaiser Road. It runs immediately north of and parallel to the freeway. It is 36 feet wide, except at several bridges where it narrows to 24 feet.

3. Future Conditions Without the Project

The physical characteristics of the rail and highway system are not expected to undergo significant change between 1990 and 1995, the year by which the landfill project is anticipated to begin operation at its maximum capacity. The volume of rail traffic on the rail lines studied is expected to remain fairly static during this period. Highway traffic volumes, however, are sensitive to the increasing urbanization of the region, and these increases will affect both the rail and highway analyses (Figure 51).

The annual growth rates for highway traffic using at-grade crossings and on roadways included in the highway impacts study area were projected based on regional data pertaining to projected trip-making characteristics in the vicinity of the at-grade crossing/roadway. Projected average annual growth in highway traffic ranged from a low of 0.7 percent per year in the east San Gabriel Valley to a high of 3.6 percent per year in the Chino Basin region of San Bernardino County. Growth in the Desert Center area is projected to be at a rate of 3.5 percent per year, or a 23 percent rate of growth between 1989 and 1995. Appendix D (page 25) contains more information regarding these projections.

Recalculation of the hazard indices for each of the at-grade crossings assessed under existing conditions indicates that the faster growth in the outlying areas of the region would result in somewhat higher positions in the overall rankings of at-grade crossings by hazard level. The highest values are projected for at- grade crossings located within the heavily urbanized western regions of the study area.

A reassessment of intersection operating conditions utilizing the increased traffic volumes indicated that LOS A conditions are projected for all turning movements at every intersection analyzed. No impact is anticipated.

4. Transfer Stations

The current trend towards locating landfills farther from urban population centers means that refuse must be hauled longer distances and through more intersections than if centralized transfer stations are employed. This means that localized impacts related to the transfer stations will almost certainly be more than offset by the reduced distances that most refuse will travel on the roadway system. In summary, regional impacts of the transfer station system are beneficial, although some local impacts may require mitigation. Study of localized impacts at transfer stations is beyond the scope of this draft EIS/EIR but should be addressed as those transfer stations are developed. A detailed discussion of the transfer stations, their existing traffic conditions, and impacts is not possible without a definitive location.

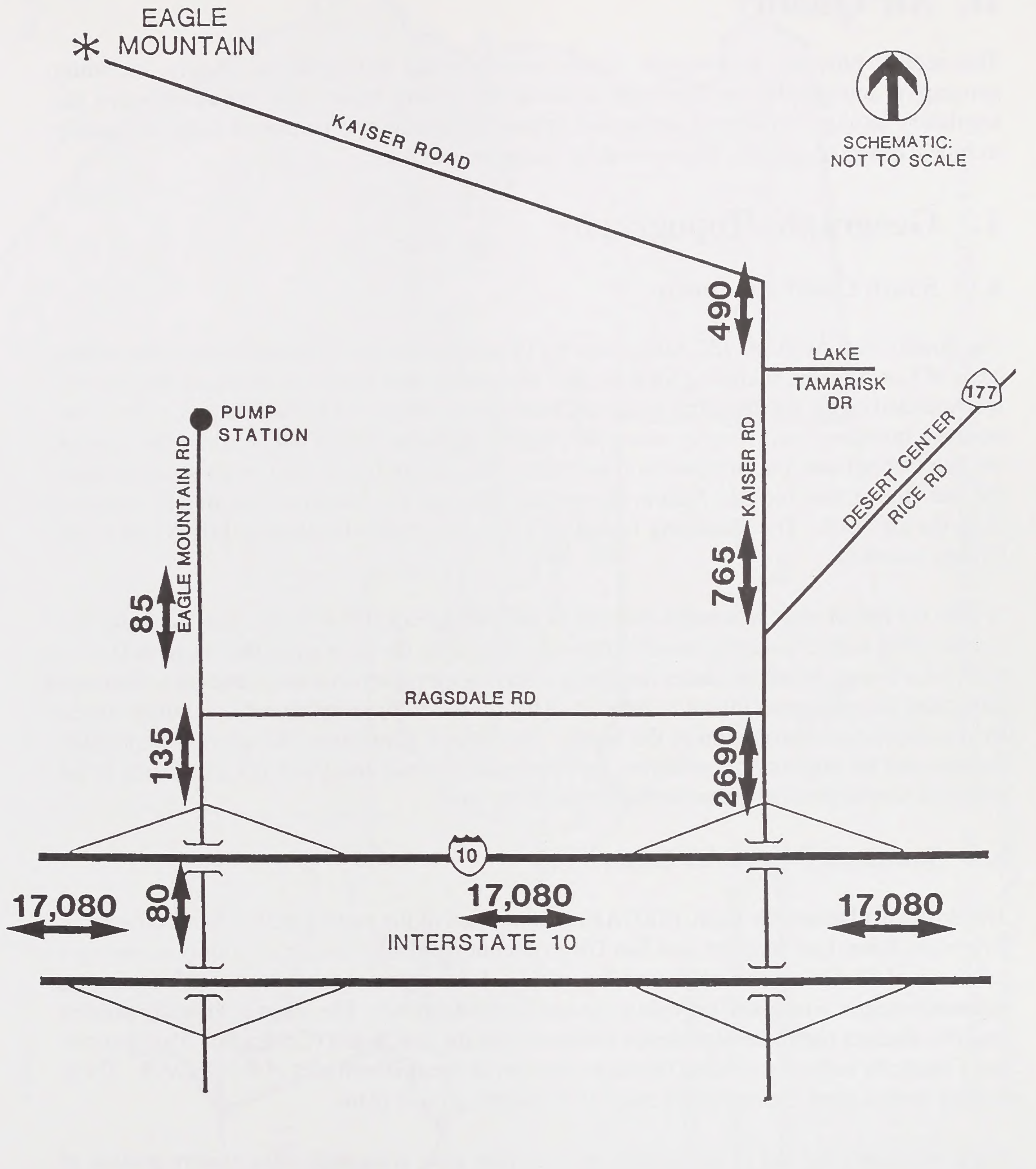

FIGURE 51. FORECAST 1995 DAILY TRAFFIC WITHOUT PROJECT

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D. Air Quality

This section provides an overview of the environmental setting for air quality, including geography, topography, meteorology, existing air quality trends and conditions, and the regulatory setting. Additional setting and impacts information is contained in the air quality technical report (Appendix E) prepared by Sierra Research Inc.

1. Geography/Topography

a. South Coast Air Basin

The South Coast Air Basin (SCAB) covers 6,215 square miles and consists of the metropolitan areas of Los Angeles, including Orange, San Bernardino, and Riverside counties (Figure 52). It is bounded on the northwest by Ventura County and on the south by San Diego County. The northern boundary runs roughly along the Angeles National Forest line north of the crest of the San Gabriel and San Bernardino mountains. The eastern border runs north-south through the San Bernardino and San Jacinto mountains, although the Banning Pass area is excluded from the air basin. The remaining boundary line is the entire shoreline of Los Angeles and Orange counties.

Within the rim of high mountains that rise to altitudes greater than 11,000 feet, the basin is a coastal plain with connecting broad valleys and low hills. On most days, the net wind flow is from west to east, which produces the effect of having air pollution source areas near the coast impacting receptor areas inland to the east. This source-receptor relationship is compounded by the population distribution in the basin. The highest population, the greatest population density, and the majority of industries, commerce, and streets and freeways are located in the principal source areas in the western portion of the basin.

b. Southeast Desert Air Basin

The Southeast Desert Air Basin (SEDAB) is composed of the eastern part of San Bernardino, Riverside, Kern, Los Angeles, and San Diego counties and all of Imperial County, covering a total area of 33,636 square miles (see Figure 52). It is separated from the coastal regions by mountain ranges, which also provide a climatological boundary. The basin is naturally divided into two distinct parts: the high desert (Mojave) and the low desert (Colorado). The Imperial and Coachella valleys constitute the major portion of the southern part of the SEDAB. These valleys form a great depression of roughly V-shaped ground plane.

Eagle Mountain, the site of the landfill specific plan area, is located in the eastern portion of the SEDAB, in the transition area between the Mojave and Colorado desert areas.

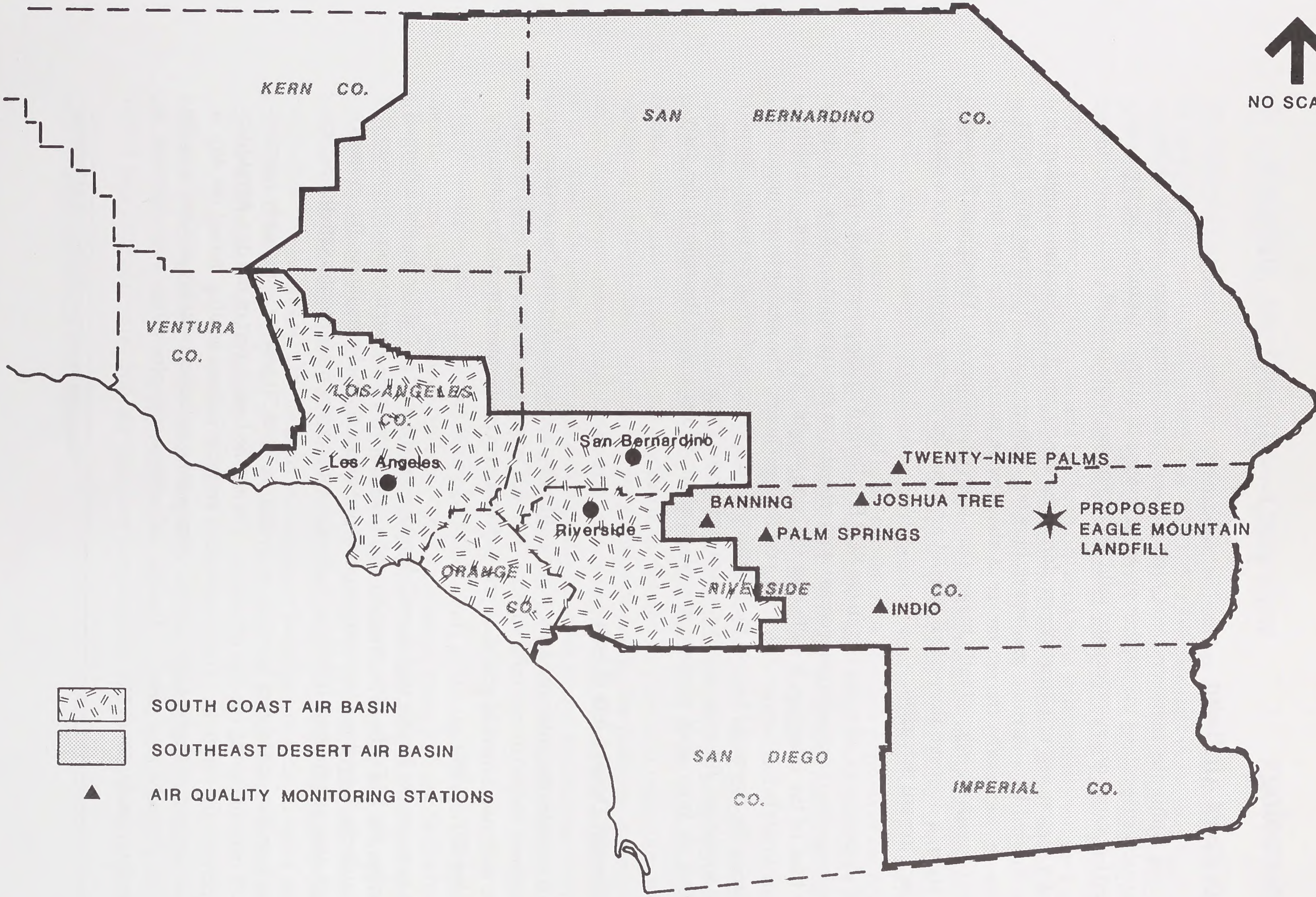

FIGURE 52. AIR BASINS AND AIR QUALITY MONITORING STATIONS ASSOCIATED WITH THE PROPOSED PROJECT

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2. Meteorology

a. South Coast Air Basin

The SCAB lies within the semipermanent high-pressure zone of the eastern Pacific Ocean. Typical of coastal strips along the western shores of continents at lower latitudes, the region is characterized by warm, dry summers and mild winters of moderate rainfall.

During the dry season, and to a lesser degree during the winter, the daily circulation pattern in the basin is typified by a daytime sea breeze blowing onshore and a nighttime land breeze moving offshore. Generally, the sea breeze is about twice as strong as the land breeze, and summer wind speeds average slightly higher than winter wind speeds. Throughout the year during the night, a drainage flow exists as cool air from the nearby mountain slopes drains down and back toward the ocean.

The vertical dispersion of air pollutants in the SCAB is limited by the presence of a persistent temperature inversion (a temperature increase with altitude) in the lower atmosphere. For that reason, the base of the inversion is called the "mixing height" of the atmosphere. Usually, inversions are lower before sunrise than during the daylight hours. The mixing height normally increases during the day as the base of the inversion erodes because of surface heating. Along the coast of southern California, relatively cool surface air temperatures, coupled with warm, dry, subsiding air from aloft, produce inversions about 87 percent of the time in the early morning.

b. Southeast Desert Air Basin

The SEDAB includes the hottest and driest parts of California, with a climate characterized by hot, dry summers and relatively mild winters. Rainfall is scant in all seasons, so differences between the seasons are marked principally by differences in temperature and not by substantial rainfall during any season.

During the summer, the Pacific High is well developed to the west of California, and a thermal trough overlies the SEDAB. The intensity and orientation of the trough varies from day to day. Although the rugged mountainous country prevents a normal circulation, the influence of the trough does permit some interbasin exchange with coastal locations through the passes.

The relative humidity in summer is very low, averaging 30 to 50 percent in the early morning and 10 to 20 percent during the late afternoon. During the hottest part of the day, humidities below 10 percent are common. These conditions promote intense heating during the day in summer and marked cooling at night, and the intense solar radiation is highly conducive to the formation of photochemical smog. During all seasons, the prevailing wind direction is predominantly from the south and west.

3. Existing Air Quality—Overview

The federal Clean Air Act provides that national ambient air quality standards (NAAQS) can be exceeded no more than once each year. The U.S. Environmental Protection Agency has set standards for sulfur dioxide, nitrogen dioxide, carbon monoxide, 10-micron particulate matter (PM10), lead, and ozone. An area where an NAAQS is exceeded twice or more during a year can be considered a "non-attainment area" subject to more stringent planning and pollution control requirements. Once an area has been declared to be in nonattainment for a pollutant, it must show 12 consecutive calendar quarters with no violation of the NAAQS for that pollutant in order to be redesignated as an "attainment" area.

State of California ambient air quality standards are set by the state Air Resources Board (ARB) to protect public health and welfare. Standards have been set for sulfur dioxide, nitrogen dioxide, carbon monoxide, 10-micron particulate matter, lead, sulfates, hydrogen sulfide, vinyl chloride, and ozone at levels designed to protect the most sensitive portions of the population, particularly children, the elderly, and people who suffer from lung or heart diseases (Table 11). ARB performs program oversight activities, while primary air quality planning and enforcement activities are carried out by local air pollution control districts.

Both state and national air quality standards consist of two parts: an allowable concentration of a pollutant and an averaging time over which the concentration is to be measured. The concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and occasionally damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short period of time (one hour, for instance) or to a relatively lower average concentration over a much longer period (one month or one year). For some pollutants there is more than one air quality standard, to reflect both its short-term and long-term effects.

As a summary of the air quality in the immediate vicinity of the landfill specific plan area, it may be noted from the discussions below that the eastern portion of the SEDAB is either considered an attainment area or is unclassified for each of the federal criteria air pollutants. An area is considered "unclassified" if there is insufficient monitoring data to support a firm designation as attainment. In areas remote from urban development, data is insufficient simply because no monitoring stations have been established there. No monitoring stations have been established in most of these remote areas because there have been no indications of significant problems. Thus, for purposes of air quality planning, the designation of unclassified is considered the same as attainment.

Although there are no published monitoring data from the immediate vicinity of the project site, baseline monitoring for weather conditions and some pollutants did begin in 1990. The limited data collected so far indicate that there have been no violations of any federal criteria

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS (1)		NATIONAL STANDARDS (2)		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 Hour	0.09 ppm (180 μg/m3)	Ultraviolet Photometry	0.12 ppm (235 μg/m3)	Same as Primary Standards	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm) (10 mg/m3)	Nondispersive Infrared Spectroscopy	9.0 ppm (10 mg/m3)	Same as Primary Standards	Nondispersive Infrared Spectroscopy
	1 Hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide	Annual Average	-	Gas Phase Chemilum-inescence	0.053 ppm (100 μg/m3)	Same as Primary Standards	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 μg/m3)		-		
Sulfur Dioxide	Annual Average	-	Ultraviolet Fluorescence	0.03 ppm (80 μg/m 3)	-	Pararosaniline
	24 Hour	0.05 ppm (131 μg/m3)		0.14 ppm (365 μg/m 3)	-	
	3 Hour	-		-	0.5 ppm (1300 μg/m3)	
	1 Hour	0.25 ppm (655 μg/m 3)		-	-	
Suspended Particulate Matter	Annual Geometric Mean	PM-10 30 μg/m3	Size Selective High Volume Sampler and Gravimetric Analysis	PM-10 (3) 50 μg/m3	Same as Primary Standards	Inertial Separation and Gravimetric Analysis
	24 Hour	PM-10 50 μg/m3		PM-10 150 μg/m3		
Sulfates	24 Hour	25 μg/m 3	Turbidimetric Barium Sulfate	-	-	-
Lead	30 Day Average	1.5 μg/m3	Atomic Absorption	-	-	Atomic Absorption
	Calendar Quarter	-		1.5 μg/m3	Same as Primary Standards	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m3)	Cadmium Hydroxide Stractan	-	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 μg/m3)	Tedlar Bag Collection, Gas Chromatography	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%		-	-	-

ppm - parts per million

μg/m3 - micrograms per cubic meter

mg/m3 - milligrams per cubic meter

(1) CO, SO_2 (1 Hour), NO_2, O_3 and PM-10 Standards are not to be exceeded. All other Standards are not to be equaled or exceeded.

(2) Not to be exceeded more than once a year.

(3) Annual arithmetic mean

TABLE 11. CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS

pollutant standards, but the state ozone standard has been reached on one day (Withycombe, Sierra Research, 3/6/91).

In the analysis of the impacts of the project, conservative assumptions are made regarding the existing concentrations of various pollutants in and around Eagle Mountain, based on the maximum recorded concentrations at the nearest monitoring stations which are likely higher than those actually occurring at Eagle Mountain.

4. Criteria Pollutants—Air Quality Trends

Appendix E (pp. 8-39) includes a discussion of the existing air quality trends in both the SCAB and the SEDAB. The appendix has graphic summaries of trends covering the last 10 years. The following paragraphs summarize that discussion.

a. Ozone

South Coast Air Basin

Ozone (O_3) is an end product of complex reactions between reactive organic gases (ROG) (or non-methane hydrocarbons, NMHC) and nitrogen oxides (NOx) in the presence of intense ultraviolet radiation. ROG and NOx emissions from millions of vehicles and stationary sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight, result in high ozone concentrations. Maximum ozone concentrations in the SCAB usually are recorded during the summer months.

The state ozone air quality standard is exceeded over half the days in the year. Peak ozone levels have slowly but steadily declined in the SCAB over the last 10 years, despite significant population growth in the region. However, the frequency of violations has remained relatively constant over the last several years after a substantial drop in the late 1970s and early 1980s. The basin is a nonattainment area for ozone for purposes of state and federal air quality planning.

Southeast Desert Air Basin

Ozone (O_3) is a problematic air contaminant in the SEDAB. The bulk of the ozone (and ozone precursors) in the basin comes from the heavily populated SCAB to the west. Maximum ozone concentrations in both the SCAB and the SEDAB usually are recorded during the summer months. In the SEDAB, maximum ozone concentrations historically have been measured at Banning (in San Gorgonio Pass) and Hesperia (near Cajon Pass) monitoring stations. Both of these stations are close to the SEDAB boundary with the SCAB, where readings would be expected to be higher than in other areas in the SEDAB.

State and federal ozone air quality standards are exceeded in the western portion of the SEDAB on roughly one-third to one-half the days in the year. While the maximum hourly concentrations have stayed relatively constant since 1973, in the range of 0.25 part per million (ppm), the number of days and hours each year when the standard is violated is on an upward trend since 1983. The basin is a nonattainment area for ozone under the state standards. Under the federal standards, the eastern and northeastern portions of the air basin are unclassified and the southwestern area is a nonattainment area for ozone.

At Joshua Tree National Monument, the federal one-hour average ozone standard of 0.12 ppm has been exceeded one day per year for several years. The ozone levels are believed to be responsible for leaf damage on some plants which are sensitive to ozone (Christiano 1990:2).

b. Nitrogen Dioxide

South Coast Air Basin

Nitrogen dioxide (NO_2) is formed primarily in the atmosphere from a reaction between nitric oxide (NO) and oxygen or ozone. Nitric oxide is formed during high temperature combustion processes when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes under certain conditions.

In the SCAB, a long, steady decline in NO_2 levels appears to have ended in the late 1980s. The basin is a nonattainment area for NO_2 for purposes of state and federal air quality planning.

Southeast Desert Air Basin

Nitrogen dioxide concentrations in the SEDAB have been below the state and federal standards for several years. Maximum one-hour NO_2 levels have been in a long-term decline since the late 1970s and are currently at about half the state standard. The last violation day was recorded in 1981. All areas in the air basin are either classified as attainment areas or are unclassified.

c. Carbon Monoxide

South Coast Air Basin

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas in California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. Industrial sources of pollution typically contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and stagnant weather conditions.

Maximum eight-hour CO levels in the SCAB are roughly two to three times the state and federal standards. The federal one-hour standard is being met, but not the more stringent state standard. While CO levels have decreased over the last 20 years, the trends have "flattened out" over the last 5 to 10 years, with little additional progress. The basin is a nonattainment area for CO for purposes of state and federal air quality planning.

Southeast Desert Air Basin

In the SEDAB, CO levels are well below the state and federal standards. The basin is considered in attainment for CO. There have been no exceedances of any state or federal air quality standards for CO since 1979 in the SEDAB. The basin is considered an attainment area for CO for purposes of state and federal air quality planning.

d. Sulfur Dioxide

South Coast Air Basin

Sulfur dioxide (SO_2) is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography.

The 1984 maximum 24-hour average SO_2 level was slightly above the California standard; no exceedances of state or federal SO_2 standards have been observed since that time. SO_2 levels in the SCAB generally have been within state air quality standards since 1981. The basin is considered to be an attainment area for SO_2 purposes of state and federal air quality planning.

Southeast Desert Air Basin

SO_2 levels in the SEDAB have been well within air quality standards since 1978. The most recent violation of the more stringent state standard was in 1977. The basin is considered to be in attainment of the state and federal SO_2 standards.

e. Particulate Sulfates

South Coast Air Basin

Particulate sulfates are the product of further oxidation of sulfur dioxide. Elevated levels can also be due to natural causes, such as sea spray.

Maximum 24-hour sulfate levels in the SCAB do not quite meet the state standard. Maximum sulfate concentrations have been in a steady decline for several years, although they may have leveled out in the late 1980s. The SCAB is a nonattainment area for sulfates for state air quality planning purposes. There is no federal standard for sulfates.

Southeast Desert Air Basin

The trend of sulfate levels in the SEDAB show that in 1985 and 1986, the maximum readings were abnormally high. These aberrant levels were recorded at China Lake during a brief period of extremely high winds that entrained the naturally occurring sulfates from the dry lake there. The basin is considered attainment for state air quality planning purposes; as noted above, there is no federal standard for sulfates.

f. Fine Particulates (PM10)

South Coast Air Basin

Particulates in the air are caused by a combination of windblown fugitive dust, particles emitted from combustion sources (usually carbon particles), and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen.

Beginning in 1984, the ARB adopted standards for fine particulates (particulate matter less than 10 microns in size) and phased out the preexisting TSP standards. PM10 standards were substituted for TSP standards because PM10 corresponds to the size range of inhalable particulates related to human health. In 1987, EPA also replaced national TSP standards with PM10 standards.

In the SCAB, 24-hour PM10 levels are four to six times the state standard. However, there are not enough years of observation to reveal a trend. The basin is a nonattainment area for PM10 for purposes of state air quality planning. Upon promulgation of the PM10 regulations by the EPA, all areas were designated attainment areas, regardless of the current air quality standing for TSP.

Southeast Desert Air Basin

The state PM10 standards are being exceeded about 50 days per year, while federal standards are exceeded less than 10 days per year. As discussed above, there are not enough years of observation to reveal a trend. The basin is considered a nonattainment area for PM10 for state air quality planning purposes. Upon promulgation of the PM10 regulations by the EPA, all areas were designated attainment areas, regardless of the current air quality standing for TSP.

5. Other Air Quality Issues

Other air quality issues include regional visibility, acid deposition, toxic air pollutants, interbasin transport, and global warming. These issues are discussed in the air quality technical appendix. Toxic air pollutants present in landfill gas are discussed in the Environmental Consequences section of this report, both in Air Quality (Section IV.D.), and in Public Health and Safety (Section IV.B.).

Joshua Tree National Monument is an area for which visibility is a special concern. The Secretary of the Interior has certified to the EPA that visibility at Joshua Tree National Monument is already being adversely affected by regional haze (Christiano 1990:1). As noted above, however, there is no federal standard related to sulfates or otherwise related to visibility. The state standard for visibility-reducing particles has not been in effect long enough to allow classification of areas to occur. The issue of fugitive dust is addressed in detail in the Environmental Consequences section.

6. Regulatory Setting

This section contains a brief summary of some of the existing air quality regulations and plans which relate to the Eagle Mountain project. A more detailed discussion of the regulatory setting is contained in the air quality technical appendix.

a. Federal Prevention of Significant Deterioration Program

The EPA has promulgated Prevention of Significant Deterioration (PSD) regulations for areas that have achieved the NAAQS. The PSD program allows new sources to be constructed or existing sources to be modified, while preserving the existing ambient air quality levels, protecting public health and welfare, and protecting Class I areas (e.g., national parks and wilderness areas).

b. Federal New Source Performance Standards

The Standards of Performance for New Stationary Sources are source-specific federal regulations, limiting the allowable emissions of criteria pollutants (i.e., those which have a National Ambient Air Quality Standard and their precursors) from such sources. The New Source Performance Standards apply to certain sources depending on the equipment size, process rate, and/or the date of construction, modification, or reconstruction of the affected facility. As of late 1990, the EPA was working on a draft set of standards and guidelines for the control of gaseous emissions from municipal solid waste landfills. If emissions of landfill gas from the project after the imposition of control measures were to exceed a limit to be specified in these guidelines, then they would be subject to review and regulation by the EPA.

c. California Clean Air Act

AB 2595, the "California Clean Air Act" (Act) was enacted by the California legislature and became law on January 1, 1989. The Act requires the local air pollution control districts to attain and maintain the federal and state ambient air quality standards at the "earliest practicable date." The Act contains several milestones for the local districts and the California Air Resources Board. The most immediate milestone is the requirement that local districts submit air quality plans to the Air Resources Board.

The plans are required to demonstrate attainment of the state ambient air quality standards, and specifically, the plans must result in a five percent annual reduction in emissions of nonattainment pollutants (ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and their precursors) in a given district. A local district may adopt additional stationary source control measures or transportation control measures, revise existing source-specific or new source review rules, or expand their vehicle inspection and maintenance program. There is no immediate impact on the project, because the Act directly affects only the local districts. However, future district regulations developed and adopted to achieve the requirements of the Act may apply to the proposed project and affect future plans for expansion or modification.

d. Local New Source Review Requirements

The South Coast Air Quality Management District administers air quality planning and regulation for the SEDAB. The SCAQMD conducts a preconstruction review program for all new or modified sources of air pollution. This program, which is known as New Source Review, is prescribed in the district's Regulation XIII. The New Source Review program contains three principal elements:

- Best available control technology
- Emissions offsets
- Air quality impact analysis

Best available control technology and emissions offsets are for all new emissions sources or modifications of existing sources. The New Source Review regulation also requires that a project neither cause nor contribute measurably to a violation of any state or national ambient air quality standard. The SCAQMD has also adopted additional rules that prescribe requirements for review of new or modified sources of toxic air contaminants.

e. Other Local Regulatory Requirements

As required by the federal Clean Air Act, plans that demonstrate attainment must be developed for those areas that have not attained the National Ambient Air Quality Standards. As part of these plans, the local air pollution control and air quality management districts have developed

regulations limiting emissions from specific sources. The SCAQMD has adopted a variety of regulations that limit the emissions of various pollutants from many types of sources in the district. These rules are collectively known as "prohibitory rules," because they prohibit the construction or operation of a source of pollution that would violate specific emissions limits. The SCAQMD has adopted general and source-specific rules and regulations that apply to this project, which are discussed in the air quality technical appendix.

f. South Coast Air Quality Management Plan

In March 1989, the South Coast Air Quality Management District adopted an Air Quality Management Plan in accordance with federal Clean Air Act requirements, which mandate that areas not attaining ambient air quality standards prepare plans demonstrating attainment by December 31, 1987, or the earliest date practicable. Because the district has such a severe air quality problem, the earliest date by which the district has projected attainment with the federal ozone standard is 2010.

The attainment strategy relies on three "tiers" of regulatory proposals, each addressing emissions reductions from stationary sources, measures pertaining to the motor vehicle sector, and impacts from population growth in the region. The proposed measures are categorized into each tier depending upon how soon they can be implemented.

E. Land Use

1. Existing Land Uses

a. Eagle Mountain Mine/Mining

The Eagle Mountain Mine site is mostly disturbed land associated with the East Pit mine and the supporting railhead, truck roads, and ore processing area. A few buildings remain adjacent to the ore processing area at the south edge of the pit. The northern margins of the project area are undisturbed hill slopes.

The Eagle Mountain Mine is currently in a state of suspended operations after its closure in 1982. Data regarding geologic iron deposits at Eagle Mountain Mine in January 1983 (Kaiser Steel Resources 1990; SCS Engineering 1990), show that approximately 335 million tons of low-grade, iron bearing material exist in nine separate reserve areas at the mine. Of these geologic reserves, only approximately 170 million tons (0.45 percent of U.S. reserves) were considered to be economically recoverable at the time of mine closure. However, these iron ore deposits are not presently considered economically producible because of the high stripping ratios, low grade, increased transportation costs, small market and low-market value for iron ore, as well as the need for beneficiation facilities and infrastructure to support mining operations at the Eagle Mountain Mine. Geologic reserves exist in six discrete areas at Eagle Mountain. A detailed discussion of the mineral resources at the mine site may be found in the Geology section of this draft EIS/EIR.

Although Kaiser Steel Resources maintains a management office at Eagle Mountain, mining activities have essentially ceased. The East Pit is essentially inactive. An enormous coarse tailing hill dominates its southern rim, with an expanse of fine tailing settling ponds to the southeast. The ore crushing and concentrating facilities at the Eagle Mountain Mine have been dismantled for salvage, and the mining equipment has been sold. In addition, much of the infrastructure required to support the operation was completely abandoned in 1986 with the suspension of mining activities. Consequently, no concentration can presently be performed at this time. Prospecting activities for precious metals have been conducted in the East Pit area, but no commercially viable quantities of these mineral resources have been found (Anderson, Kaiser Steel Resources, 7/5/90).

Since closure of the Eagle Mountain Mine, resource production uses have been limited to sporadic shipments of previously stockpiled pelletized iron ore concentrates and rock products such as riprap, roadbase, and decorative and crushed rock, amounting to about 10,000 tons per year (Anderson, Kaiser Steel Resources, 11/7/89). These products have been shipped mainly by truck, the last rail shipment having been made in 1986.

b. FLPMA Railroad and Truck Road Right-of-Way Grant

The project includes the updating of the rail right-of-way granted to Kaiser Steel Resources for mining uses between Ferrum Junction on the northeast coast of the Salton Sea and the proposed project. The rail line is approximately 52 miles long, 32 miles of which exist on a legislatively authorized right-of-way. It was last used in 1986.

The existing Eagle Mountain Road from the I-10 interchange to the MWD pumping station will be widened to a 40-foot paved road and receive a FLPMA right-of-way. The total right-of-way being applied for is 110 feet wide to allow for the paved roadway, shoulders, and berms. This portion of the right-of-way is approximately seven miles long. The purpose of this road right-of-way is to serve as the main access route to the proposed landfill site.

The proposed Eagle Mountain Road Extension will begin just south of the MWD pumping station and will continue northeasterly at first and then northwesterly before heading northerly to an existing landfill haul road on-site. This partially existing dirt road is approximately 15 to 18 feet wide in most areas and is known locally as the Kaiser Truck Trail. This portion of the truck trail will be converted to a FLPMA right-of-way. The remainder of the Kaiser Truck Trail will be vacated.

c. BLM/Kaiser Steel Resources, Inc., Land Exchange

Under the Federal Land Policy and Management Act, BLM and Kaiser Steel Resources, Inc., will agree on those lands to be transferred to Kaiser in the land exchange. Land currently owned by Kaiser Steel Resources, Inc., will be offered in exchange for those selected lands.

Selected Lands

Under FLPMA, BLM will transfer approximately 3,271 acres of publicly owned lands in the Eagle Mountains (within the Eagle Mountain Mine site area) to Kaiser Steel Resources, Inc. These selected lands include both unencumbered parcels and lands with a variety of unpatented mining and millsite claims and the townsite area. Currently, no mining activity occurs on these lands.

Offered Lands

Offered lands are those Kaiser Steel Resources lands to be transferred to federal ownership. These are generally located along Salt Creek and the entire length of the Eagle Mountain rail line from Ferrum Junction (on the northeast coast of the Salton Sea) to Eagle Mountain (see Figures 5-10). These lands contain no known mineral resources and no mining activity occurs on them.

2. Surrounding Land Uses

The Eagle Mountain townsite (not a part of the project) is adjacent to the project area, south of the East Pit. The townsite is owned by Kaiser Steel Resources. The deed granting ownership includes a clause that title will revert to the BLM in the event the townsite is not used in support of mining. The existing town of Eagle Mountain consists of several hundred residences developed by Kaiser to house mine workers. Most of these single-family units are unoccupied. Several units are currently occupied by Kaiser employees, with additional units used in association with the state correctional facility and rented by others. Support facilities included a post office, store, and cafe, none of which are in operation, and two churches, which are no longer meeting. A landing strip is located adjacent to and east of the townsite. This landing strip was granted under a fee right-of-way pursuant to the Act of 6/18/1932 to the Metropolitan Water District on November 9, 1990. All of the townsite properties are under the control of Kaiser Steel Resources.

A state minimum security correctional return-to-custody facility (RTCF) for parole violators has been operating in Eagle Mountain since 1986 under a lease from Kaiser and a County Public Use Permit. This facility houses 271 inmates and has received approval to expand to 500 in facilities to be constructed in two phases.

The townsite is served by Kaiser Road, a county road, and all utilities and communications services, including cable television. A wastewater treatment plant is located southeast of the community. Its present capacity is 40,000 gallons per day; however, its potential capacity is 180,000 gallons per day. The on-site water system is supplied by a groundwater well. Since fluoride levels in this groundwater exceed drinking water standards, drinking water is transported weekly by truck from Blythe. A truck's capacity is 2,000 gallons. During the winter, the townsite, including the return-to-custody facility, uses approximately 3,000 gallons per week and during the summer approximately 4,500 gallons per week. These services are discussed in detail in the Utilities and Services section of this draft EIS/EIR.

Beyond the townsite, the East Pit mine and tailing areas, and the adjacent processing and railroad loading area, the margins of the project site are in essentially natural condition and serve a de facto open space and resource preservation function. The biology section of this draft EIS/EIR contains a discussion of the biological resources present.

The nearest residential uses beyond the townsite are scattered single-family homes about four miles to the southeast of Eagle Mountain and in the Lake Tamarisk and Desert Center areas approximately nine and ten miles southeast, respectively. The Lake Tamarisk development consists of about 70 privately owned single-family homes, two recreational lakes, a nine-hole golf course, a 150-space recreational vehicle park, and about 150 undeveloped lots owned by Kaiser Steel Resources. Desert Center has a number of single-family residences, most associated with nearby businesses. There are also two trailer parks in the area.

Commercial services and institutional land uses are found primarily in Desert Center, at the junction of Interstate 10 and State Route 177. A post office, two gas stations, three mini-markets, a cafe, a drive-in, and a bar provide services to the traveling public and residents of the area, including Eagle Mountain. There is also a County fire station, branch library, a telephone company office, and several churches. A senior center, recreation center, and pro shop associated with the golf course are located in Lake Tamarisk.

Resource production uses in the surrounding area include the Kaiser Steel holdings west of the project site, as well as other small claims farther west. The Central Pit and the Black Eagle pits are currently inactive, with some exploratory activity occurring sporadically in the area. There are several relatively small gravel pits located to the southeast between Eagle Mountain and Desert Center.

Some land east of Desert Center is used as irrigated cropland, producing mostly asparagus and jojoba, a shrub which produces an oil which is used in a number of products. The area is not mapped as Important Farmland by the State Department of Conservation or reflected as such in the General Plan (County of Riverside 1987:Figure VI.35). Approximately 994 acres within three agricultural preserves established under the Williamson Act are located near the town of Desert Center. In 1988 there were 4,913 acres of jojoba grown in the vicinity (County of Riverside 1988). However, this figure is dropping due to sporadic yields and other factors (Kaminskas, 11/8/89). Groundwater is pumped to irrigate these crops.

Recreational land uses in the area surrounding the project site include desert touring, shooting, hiking, wildlife viewing, or camping on large expanses of designated public lands administered by the BLM in the Eagle Mountains and Chuckwalla Valley. To the north, in the adjacent Pinto Basin portion of Joshua Tree National Monument, recreational use is restricted to winter backpacking. Recreational use is restricted or prohibited on much of the private mining and utility holdings in the area. There are no nearby areas for off-road vehicle use. The recreation vehicle park at Lake Tamarisk provides private recreational opportunities. A small public campground operated by the BLM is located in a palm oasis at Corn Springs, 15 miles southeast of Desert Center.

Transportation, utilities, and communications facilities crisscross the desert in the area surrounding Eagle Mountain. County-maintained paved roads are intersected by numerous dirt roads in the Chuckwalla Valley. A power transmission line and service road traverse the Coxcomb Mountains from the northeast to skirt the Eagle Mountains to the south. The Colorado River Aqueduct follows basically the same route and comes within a few hundred feet of the eastern edge of the project site in an open channel, before it flows into a tunnel and the Eagle Mountain pumping station. Gas, electric, and telephone lines also run along roads in the area. There are only a few jeep roads in the Eagle Mountains, which provide access to mining claims to the west and a radio tower adjacent to the project site on a nearby ridge.

Much of the rugged desert mountains and sweeping valley slopes surrounding the Eagle Mountain project site, if not utilized as noted above, are vacant and can be considered as serving open space and resource preservation functions.

3. Existing Land Use Plans and Policies on Project Site

The use of land on the project site is controlled by a number of plans and policies of the agencies discussed below.

a. County of Riverside

The Riverside County Comprehensive General Plan provides the primary vehicle for articulating local public land use policy on the non-federally managed lands of the project site. The General Plan is implemented by zoning districts, which regulate uses and establish land use standards. Certain uses are further regulated by use permits, which establish detailed conditions for operations of the regulated uses.

The General Plan is divided into topical elements, which each establish goals, policies, and objectives for development in unincorporated Riverside County. The Land Use Element divides the county into planning areas. Within the Chuckwalla Land Use Planning Area, the Eagle Mountain Mine site is further classified as the Eagle Mountain Planning Area. The proposed project falls within this sub-planning area. As indicated in the plan:

> Future land uses in this area should be open space and conservation land uses, with mining a possible use if the Eagle Mountain facility is reopened (County of Riverside 1987:98).

Using the Land Use Determination System established by the General Plan, the Open Space and Conservation Map indicates that the project area is currently designated Mineral Resources, Desert and Mountainous Areas, and Areas Not Designated As Open Space (ANDOS) (see Figure 14). The Mineral Resources, Desert, and Mountainous designations are classed as open space and conservation areas, and general policies for permitted land uses in these areas are found in the Environmental Hazards and Resources Element. It should be noted that some of the land covered by the General Plan is under federal ownership and open to other uses (such as mineral entry) than those designated by the County. Mineral Resources areas permit mineral production and related and compatible land uses which would preserve mineral production capabilities, with a minimum lot size of 20 acres (County of Riverside 1987:370, 401-403). Desert Areas permit open space and limited recreational uses, limited single-family residential uses (one dwelling unit per lot), landfills, compatible resource development, and governmental uses on lots of generally 10 acres in size. Mountainous Areas permit the same uses and densities, but are defined as having slopes in excess of 25 percent with no county road access or community water system (County of Riverside 1987:369).

Land uses in ANDOS are determined by review of the Environmental Hazards and Resources Element policies and composite maps, as well as considering the profile of the Eagle Mountain Planning Area, cited above. In addition, land use categories are established by the General Plan and used to evaluate the site for a final land use determination. The ANDOS in the project site are the ore processing area north of the truck road and west of the rail switching area. A review of these General Plan policies and intensity categories indicate an appropriate designation of this area to be Category IV - Outlying Area. Category IV areas are characterized as “self sufficient” in terms of public services, with basic road improvements, low residential densities, limited convenience commercial services, and potential for resource production and waste disposal as considered appropriate. Landfills are designated as acceptable land uses in this Category IV area (County of Riverside 1987:176).

The Comprehensive General Plan also contains a Solid Waste Element (pages 256-258.1). The objectives of this element are to provide adequate disposal capacity to accommodate existing and future solid waste generation, to minimize and mitigate the environmental impacts of these facilities, and to encourage waste management strategies to facilitate resource recovery in all new development proposals. The Solid Waste Element states that existing and proposed landfill sites established by the County Solid Waste Management Plan are to be shown on the General Plan Countywide Information Map of Public Facilities. As a part of the General Plan amendment, the public facilities map must be amended to indicate the Eagle Mountain landfill as a landfill site. A text land use standard states that all new proposals for solid waste disposal and/or resource recovery sites shall be consistent with the CoSWMP. The CoSWMP is discussed below.

General Plan land use policies are implemented by several zoning categories on the project site. Most of the former mining and processing areas of the site are zoned M-R-A (Mineral Resources and Related Manufacturing) (see Figure 15). This zone provisionally permits mining and related processing uses with the issuance of a permit under County Ordinance No. 555, implementing the State Surface Mining and Reclamation Act. In addition, this zone provides some performance standards concerning noise, road criteria, slopes, and other land use and operations considerations.

A small area north of Kaiser Road at the edge of the tailing hill is zoned W-2 (Controlled Development Area), permitting residential and light agricultural uses and certain recreational and institutional developments with a plot plan approval and, with a conditional use permit, limited mining and commercial/agricultural uses.

A very small part of the project site located west of the rail switching area is zoned N-A (Natural Assets). This zone is limited to single-family residential and recreational uses on 20-acre or larger parcels and, with a conditional use permit, limited commercial, recreational, and mining uses with a surface mining permit.

None of these zones permit a landfill on the project site. The only County zoning district which allows for "dump sites" (i.e., landfills) is in the M-H (Manufacturing-Heavy) zone, with a conditional use permit. This zone does not allow by right or by conditional use permit the type of mining operations currently permitted in the M-R-A zone.

In addition to the Comprehensive General Plan, a second County policy document contains added land use considerations. The Riverside County Solid Waste Management Plan implements land use considerations mandated by state law as it applies to the County. The CoSWMP includes the Eagle Mountain landfill project as a tentatively identified waste disposal site and states:

> Although the site has several attributes that favor development of such a facility and has been included herein as a tentatively identified landfill, before it can be developed considerable engineering, environmental, and economic studies must be completed and evaluated to determine that there will be no degradation of groundwater, or other adverse, irreversible environmental impacts (County of Riverside 1989:XI-28).

The CoSWMP also notes that pursuant to Title 7.3, Section 66780.2, of the Government Code, a tentatively identified site can be removed from the CoSWMP if Riverside County fails to make a finding that the site is consistent with the General Plan or has made a finding that the site should not be used for a solid waste management facility. A tentatively identified site may also be removed if the California Integrated Waste Management Board refuses to concur in the issuance of a solid waste facility permit for the site because of the County's failure to make the finding that the site is consistent with the General Plan. Further, siting approval by CIWMB requires a finding from the County that the distance from the solid waste facility to the nearest residential structures is in compliance with all of the state Minimum Standards for solid waste management and that the distance is sufficient to permit adequate control of noise, odor, nuisances, traffic, litter, and vectors (Section 66784.2).

b. Bureau of Land Management

Most of the desert land encompassing the project site and surrounding it in the Mojave and Colorado deserts is under federal jurisdiction and managed by the Bureau of Land Management. The California Desert Conservation Area Plan, approved by the U.S. Department of the Interior, Bureau of Land Management, in 1980, provides a comprehensive land use management plan for the 25-million-acre California Desert Conservation Area. Over 12 million acres in the CDCA are public lands.

The CDCA Plan was prepared pursuant to the Federal Land Policy and Management Act of 1976. Section 601 of the FLPMA requires that BLM develop a plan to ". . . provide for the immediate and future protection and administration of public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance

of environmental quality." Section 103 of the FLPMA defines the terms "multiple use" and "sustained yield" as follows:

> The term "multiple use" means the management of public lands and their various resource values so that they are utilized in combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource values that takes into account the long-term needs of future generations for the renewable and non-renewable resources including but not limited to recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values.

> The term "sustained yield" means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

The goal of the plan is to "provide for the economic, educational, scientific and recreational use of public lands and resources of the California Desert Conservation Area, in a manner which enhances, on balance, the environmental, cultural, and aesthetic values of the desert and its future productivity" (BLM 1980:5). There are four multiple use classes, as defined in the plan. The guidelines applicable to each multiple use class are listed in Table 12.

The plan designates federal land within and adjacent to the project site as Multiple Use Class M and the areas of the Eagle Mountains north and west of the East Pit as Class I (Figure 53). Multiple Use Class M (Moderate Use) provides for "a controlled balance between higher intensity use and the protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause." Multiple Use Class I (Intensive Use) provides for "concentrated use of lands and resources for human needs," but with "reasonable protection of sensitive natural and cultural values" and mitigation and rehabilitation "insofar as possible" (BLM 1980:13). Class I guidelines are less stringent concerning water quality, vehicle access, and recreational vehicle use than Class M guidelines cited in Table 12, but in other ways are identical with those of Class M.

Class L lands are managed for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. Class C multiple use is intended as a wilderness management designation which identifies areas "preliminarily recommended" as suitable for wilderness designation by Congress.

The waste disposal guidelines cited in Table 12, number 16, indicate that BLM-managed lands may not be used for waste disposal. This guideline would not preclude the use of the site for

TABLE 12
MULTIPLE USE CLASS GUIDELINES

	MULTIPLE-USE CLASS C Controlled Use (Wilderness Management) (Note: Class C identifies areas "preliminarily recommended" for wilderness designation by Congress. These guidelines summarize the kinds of management likely to be used in these areas after formal designation of wilderness by Congress.)	MULTIPLE-USE CLASS L Limited Use	MULTIPLE-USE CLASS M Moderate Use	MULTIPLE-USE CLASS I Intensive Use
1. AGRICULTURE	Agricultural uses (excluding livestock grazing) are not allowed.		Agricultural uses may be allowed on suitable land classified for these purposes. Prospective leases for potential desert crops, e.g., jojoba, guayule or others, may be allowed only after NEPA requirements are met.	
2. AIR QUALITY	These areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments unless otherwise designated another class by the State of California (see 42 USC 7474, and the final regulations, if and when promulgated) as a result of recommendations developed by any BLM air-quality management plan.			
3. WATER QUALITY	These areas will be managed to maintain and enhance both surface- and ground-water resources.	Areas designated in these classes will be managed to minimize degradation of the water resources. Best management practices, developed by the Bureau during the planning process outlined in the Clean Water Act, Section 208, and subsequently, will be used to avoid degradation and to comply with Executive Order 12088.		Areas designated in this class will be managed to minimize degradation of water resources. Best management practices, developed by the Bureau during the planning process outlined in the Clean Water Act, Section 208, and subsequently, will be used to keep impacts on water quality minimal and to comply with Executive Order 12088.
4. CULTURAL AND PALEONTOLOGICAL RESOURCES	Archaeological and paleontological values will be preserved and protected. Procedures described in 36 CFR 800 will be observed where applicable. A Memorandum of Agreement has been signed by the BLM, the California State Historic Preservation Officer, and for cultural resources the President's Advisory Council on Historic Preservation to protect cultural resource values.			
5. NATIVE AMERICAN VALUES	Native American cultural and religious values will be preserved where relevant and protected where applicable. Native American group(s) shall be consulted. Memorandums of Agreement and Understanding have been signed between BLM and the Native American Heritage Commission pertaining to Native American concerns and cultural resources.			
6. ELECTRICAL GENERATION FACILITIES	Electrical generation plants are not allowed.	Electrical generation plants may be allowed (See wind/solar/geothermal, below.)	All types of electrical generation plants may be allowed in accordance with State, Federal, and local laws.	
		Existing facilities may be maintained and upgraded or improved in accordance with special-use permits or by amendments to rights-of-way.		
—Nuclear and Fossil Fuel Powerplants	Not allowed.		May be allowed in accordance with Federal, State, and local laws.	
—Wind/Solar Powerplants	Not allowed.	May be allowed after NEPA requirements are met.		
—Geothermal Powerplants	Not allowed.	May be allowed pursuant to licenses issued under 43 CFR Section 3250, et. seq. An EIS will be required.	May be allowed pursuant to licenses issued under 43 CFR Section 3250, et. seq. NEPA requirements will be met.	

TABLE 12 (cont.)
MULTIPLE USE CLASS GUIDELINES

	MULTIPLE-USE CLASS C Controlled Use (Wilderness Management)	MULTIPLE-USE CLASS L Limited Use	MULTIPLE-USE CLASS M Moderate Use	MULTIPLE-USE CLASS I Intensive Use
7. TRANSMISSION FACILITIES	New transmission facilities for electricity, gas, water, and telecommunications are not allowed and new licenses or rights-of-way for these purposes will not be granted, except as provided for in the Wilderness Act of 1964—16 USC 1133(d)(4) or as may be specified by Congress.	New gas, electric, and water transmission and trans-desert telecommunications facilities may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met.		
	Existing facilities may be maintained subject to Wilderness Management Plan.	Existing facilities within designated corridors may be maintained and upgraded or improved in accordance with existing right-of-way grants or by amendments to right-of-way grants. Existing facilities outside designated corridors may only be maintained but not upgraded or improved.		
—Distribution Facilities	New licenses or rights-of-way for distribution facilities to serve private properties will not be granted. Existing facilities may be maintained or improved but not expanded.	Existing facilities may be maintained and upgraded or improved in accordance with existing right-of-way grants.		
		New distribution systems may be allowed and will be placed underground where feasible except where this would have a more detrimental effect on the environment than surface alignment. In addition, new distribution facilities shall be placed within existing rights-of-way where they are reasonably available.	New distribution facilities may be allowed and shall be placed within existing rights-of-way where they are reasonably available. NEPA requirements will be met.	
8. COMMUNICATION SITES	New communication sites are not allowed unless required for protection of wilderness values or visitors.	New communication sites may be allowed in designated areas (see map in Utility Element). EA required.	New sites may be allowed. NEPA requirements will be met.	
	Maintenance and operation of existing sites and facilities may be allowed subject to Wilderness Management Plan.	Existing facilities may be maintained and utilized in accordance with right-of-way grants and applicable regulations.		
9. FIRE MANAGEMENT	Fire suppression measures will be taken in accordance with specific wilderness fire management plans to be followed by the authorized officer, and may include use of motorized vehicles, aircraft, and fire retardant chemicals.	Fire suppression measures will be taken in accordance with specific fire management plans subject to such conditions as the authorized officer deems necessary, such as use of motorized vehicles, aircraft, and fire retardant chemicals.		
10. VEGETATION —Harvesting (Native Plant)	Removal of vegetation, non-commercial, may be allowed by permit only after an EA or EIS is prepared and after development of necessary stipulations.	Removal of vegetation, commercial or non-commercial, may be allowed by permit only after NEPA requirements are met and after development of necessary stipulations.		
—Harvesting by Mechanical Equipment	Not Allowed.	Harvesting by mechanical equipment may be allowed by permit only.		
—Rare, Threatened, and Endangered Species, State and Federal	All state and federally listed species will be fully protected. Actions which may jeopardize the continued existence of federally listed species will require consultation with the U.S. Fish and Wildlife Service.			
—Sensitive Plant Species (including candidates for listing by FWS; FWS Species of Concern; species on List 2, CNPS, 1980)	Identified sensitive species will be given protection in management decisions consistent with wilderness values and BLM policies.	Identified species will be given protection in management decisions consistent with BLM policies.		

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TABLE 12 (cont.)
MULTIPLE USE CLASS GUIDELINES

Vegetation (cont.) —Unusual Plant Assemblages (UPAs)	Identified UPAs will be given protection In management decisions consistent with wilderness values and BLM policies.	Identified UPAs will be considered when conducting all site-specific environmental impact analyses to minimize Impact. See also Wetland/Riparlan Areas guidelines.	
—Vegetation Manipulation 1. Mechanical Control	Mechanical control will not be allowed.		Mechanical control may be allowed, but only after consideration of possible impacts.
2. Chemical Control	Aerial broadcast application of chemical controls will not be allowed.		
	Spot application will not be allowed.	Noxious weed eradication may be allowed after site-specific planning. Types and uses of pesticides, in particular herbicides, must conform to Federal, State, and local regulations (see Vegetation Element).	Spot applications will be allowed after site-specific planning. Types and uses of pesticides, in particular herbicides, must conform to Federal, State, and local regulations (see Vegetation Element).
3. Exclosures	Exclosures will not be allowed.	Exclosures may be allowed.	
4. Prescribed Burning	Prescribed burning will not be allowed.	Prescribed burning may be allowed after development of a site-specific management plan.	
11. LAND-TENURE ADJUSTMENT	Lands will be acquired, disposed of, or exchanged in accordance with FLPMA and other applicable Federal laws and regulations, to assure more efficient management of the public lands and to reduce conflicts with other public and private landowners to provide more consistency and logic in desert-wide land-use patterns.		
12. LIVESTOCK GRAZING	Grazing will be allowed subject to limitations to preserve wilderness characteristics and the protection of sensitive resources, except that existing grazing will only be subject to the protection of sensitive resources.	Grazing will be allowed subject to the protection of sensitive resources.	
	Major support facilities, such as permanent corrals, loading chutes, and significant water developments, will not be allowed except for existing facilities pursuant to valid existing leases, licenses, and permits. Maintenance of such facilities will be controlled to prevent unnecessary or undue degradation of wilderness values.	Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, may be allowed consistent with protection of ,sensitive resources.	Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, will be allowed.
	Manipulation of vegetation by chemical or mechanical means will not be allowed.	Manipulation of vegetation by chemical or mechanical means will not be allowed, except for site-specific needs. (See Vegetation Element.)	Manipulation of vegetation by chemical or mechanical means may be allowed and may be designed, developed, and managed for intensive livestock use.

TABLE 12 (cont.)
MULTIPLE USE CLASS GUIDELINES

	MULTIPLE-USE CLASS C Controlled Use (Wilderness Management)	MULTIPLE-USE CLASS L Limited Use	MULTIPLE-USE CLASS M Moderate Use	MULTIPLE-USE CLASS I Intensive Use
13. MINERAL EXPLORATION AND DEVELOPMENT	These guidelines summarize the kinds of management likely to be used after formal designation of wilderness by Congress. Congressional enactment of wilderness will prescribe mining rules and possible cutoff dates for mineral entry. The information below indicates the possible restrictions after enactment. The following summarizes possible significant provisions of the Wilderness Act as it applies to mineral exploration and development after Congress officially designates the areas as wilderness. (For more detailed information, see the G-E-M Element or the Wilderness Act of Sept. 3, 1964). Minerals Prospecting and Exploration: Prospecting and exploration for the purpose of gathering information about mineral resources is allowed, provided such activity is carried on in a manner compatible with the preservation of the wilderness environment. Mineral Development: All designated wilderness areas may be withdrawn from mineral entry at sometime subsequent to Congressional designation. Following withdrawal, *no new mining claims* may be located, and no new permits, leases, or material sales contracts may be issued subject to deadlines established by Congress. Valid existing mining operations may continue pursuant to submission and approval of operational plans which will prevent unnecessary or undue degradation of wilderness qualities.	*Leasable Minerals* Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled "Categorical Exclusions," prior to issuing any mineral leases, an environmental assessment will be prepared on the proposed mineral leasing action. As this class is an area of significant public concern, 60 days' public comment will be provided on the EA. An EIS will be prepared if the proposal would significantly impact the quality of the human environment and this should be expected in areas of especially sensitive surface resources. Mitigation measures as appropriate, subject to technical, ecological, wildlife, vegetation, and cultural values. Prior to any operations upon mineral leases, the operator shall submit the appropriate notices or applications to BLM or the U.S. Geological Survey (USGS), as appropriate, as specified in 43 CFR 3100, 3200, 3500. All applications submitted to the USGS shall be treated under existing joint BLM/USGS procedures (i.e., S.O. 2948) and other applicable regulations. Reclamation requirements are contained within these procedures. *Locatable Minerals* Location of mining claims is nondiscretionary. Operations on mining claims are subject to the 43 CFR 3809 Regulations and applicable State and local law. In most instances, plans of operation shall be required and treated as specified in the above regulation. An EA shall be prepared on the proposed plans of operations. As this class is a sensitive area of public concern, a 60-day public review period shall be held on all mining and reclamation plans filed in this class. BLM will review plans of operations for potential impacts on sensitive resources identified on lands in this class. Mitigation, subject to technical and economic feasibility, will be required.	*Leasable Minerals* Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled "Categorical Exclusions," prior to issuing any mineral leases, an EA will be prepared on the proposed leasing action. Mitigation measures will be required to protect sensitive scenic, ecological, wildlife, vegetative, and cultural values. Prior to any operations upon mineral leases, the operator shall submit the appropriate notices or applications to BLM or the U.S. Geological Survey (USGS), as appropriate, as specified in 43 CFR 3100, 3200, 3500. All applications submitted to the USGS shall be treated under existing joint BLM/USGS procedures (i.e., S.O. 2948) and other applicable regulations. Reclamation requirements are contained within these procedures. *Locatable Minerals* Location of mining claims is nondiscretionary. Operations on mining claims are subject to the 43 CFR 3809 Regulations and applicable State and local law. In most instances, plans of operations shall be required and treated as specified in the above regulation. NEPA requirements will be met. BLM will review plans of operations for potential impacts on sensitive resources identified on lands in this class. Mitigation, subject to technical and economic feasibility, will be required.	

TABLE 12 (cont.)

MULTIPLE USE CLASS GUIDELINES

Table 1.—*Multiple-Use Class Guidelines*—Continued

	MULTIPLE-USE CLASS C Controlled Use (Wilderness Management)	MULTIPLE-USE CLASS L Limited Use	MULTIPLE-USE CLASS M Moderate Use	MULTIPLE-USE CLASS I Intensive Use
Recreation (cont.)	—nature study and observation —photography and painting —rockclimbing —spelunking —hunting	these conditions will include, but are not limited to: -approved routes -no pitting, start, finish, or spectator areas.		cept where specific mitigations are stipulated by the authorized officer.
	Permanent or temporary facilities for resource protection and public health and safety may be allowed at the discretion of authorized officer or in accordance with approved Wilderness Management Plans.	Permanent or temporary facilities for resource protection and public health and safety are allowed.		
	Trails are open for non-vehicular use and new trails for non-motorized access may be allowed.			
16. WASTE DISPOSAL	Waste disposal sites will not be allowed in this class.	Hazardous waste disposal sites will not be allowed. New non-hazardous waste disposal sites will not be allowed.	Public lands managed by BLM may not be used for waste disposal (either hazardous or non-hazardous). Locations suitable for waste disposal, when found on BLM-managed public lands, will be transferred to other ownership through sale or exchange.* *This is the wording as amended on 1/15/87.	
17. WILDLIFE SPECIES AND HABITAT Rare, Threatened, and Endangered Species (both State and Federal)	All State and federally listed species and their critical habitat will be fully protected. Actions which may affect or jeopardize the continued existence of federally listed species will require formal consultation with the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act.			
—Sensitive Species	Identified sensitive species will be given protection in management decisions consistent with wilderness values and BLM policies.	Identified species will be given protection in management decisions consistent with BLM policies.		
—Predator and Pest Control	Predator and pest control will not be allowed except to alleviate public health hazards or to protect endangered species.	Control of depredating wildlife and pests will be allowed in accordance with existing State and Federal laws.		
—Habitat Manipulation	Projects to improve wildlife habitat may be allowed subject to environmental assessment.		Same as Classes C and L, except that chemical and mechanical vegetation manipulation may be allowed.	
—Reintroduction or Introduction of Established Exotic Species	Reintroduction of native species is allowed.	Reintroduction or introduction of native species or established exotic species is allowed.		
18. WETLAND/RIPARIAN AREAS	Wetland/riparian areas will be considered in all proposed land-use actions. Steps will be taken to provide that these unique characteristics and ecological requirements are managed in accordance with Executive Order 11990, Protection of Wetlands (42 CFR 26951), legislative and Secretarial direction, and BLM Manual 6740, "Wetland-Riparian Area Protection and Management" (10/1/79), as outlined in the Vegetation Element.			
19. WILD HORSES AND BURROS	Populations of wild and free-roaming horses and burros will be maintained in accordance with the Wild and Free-Roaming Horse and Burro Act of 1971 but will be subject to controls to protect sensitive resources as provided for in management plans for wilderness areas. (See Wild Horse and Burro Element.)	Populations of wild and free-roaming horses and burros will be maintained in healthy, stable herds, in accordance with the Wild and Free-Roaming Horse and Burro Act of 1971 but will be subject to controls to protect sensitive resources. (See Wild Horse and Burro Element.)		

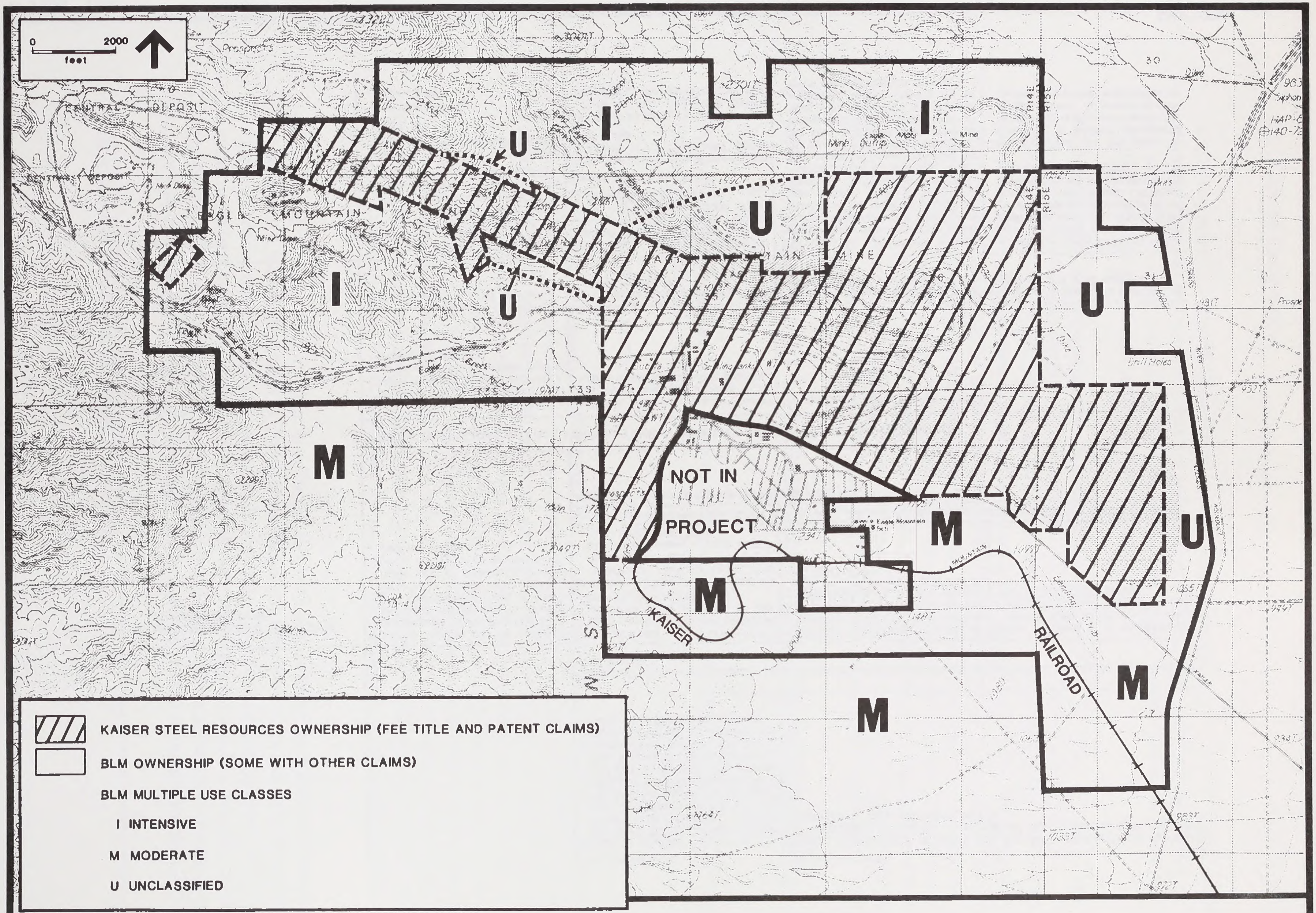

FIGURE 53. BLM MULTIPLE-USE CLASSES ADJACENT TO THE PROJECT AREA

TABLE 12 (cont.)
MULTIPLE USE CLASS GUIDELINES

		Saleable Minerals Except as provided in Appendix 5.4, 516 DM 6, NEPA procedures titled "Categorical Exclusions," for new sites less than 5 acres in size, an EA shall be required for all material sales locations, including sand and gravel. For new sites greater than 5 acres, or in sites less than 5 acres where the EA indicates a significant level of adverse impacts, an EIS shall be required.	*Saleable Minerals* Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled "Categorical Exclusions," new material sales locations, including sand and gravel sites, will require an EA.	
		Continued use of existing areas of sand and gravel extractions is allowed subject to BLM permits, as specified in 43 CFR 3600.		
14. MOTORIZED-VEHICLE ACCESS/ TRANSPORTATION	Motorized-vehicle use is generally not allowed unless provided for in individual wilderness legislation and management plans or if necessary to serve valid existing rights, and for emergency use for public safety, or protection of wilderness values.	New roads and ways may be developed under right-of-way grants or pursuant to regulations or approved plans of operation. Motorized-vehicle use is allowed on "approved" routes of travel. This means that "existing" routes of travel are closed unless specifically designated "open."	Motorized-vehicle use will be allowed on "existing" routes of travel unless designated closed by the authorized officer. New routes may be allowed upon approval of the authorized officer.	Same as Class M. In addition, the vehicle open areas are available for unrestricted vehicle access (see Recreation Element).
		Vehicle use on some major dunes and dry lakebeds may be allowed (see Motorized-Vehicle Access Element).		
		Periodic or seasonal closure of routes of travel may be required.		
	Compliance with Executive Orders 11644 and 11989 as applied to motorized-vehicle access will be assured.			
—Railroads	No new railroads and trams will be allowed. Existing railroads and trams may be operated and maintained subject to nonimpairment of wilderness values.	Railroads and trams may be allowed to serve authorized uses if no other viable alternative is possible.	Railroads and trams may be allowed.	
—Aircraft	Aircraft facilities are not allowed.	Temporary landing strips may be allowed by permit.	Airports and landing strips may be allowed by lease subject to conformance with county or regional airport plans and FAA and DOD approval.	
15. RECREATION	This class is suitable for nonmechanical types of recreational experience which generally involve low to very low user densities. Recreational opportunities provided include, but are not limited to, the following characteristic activities: —backpacking —primitive, unimproved site camping —hiking —horseback riding —rockhounding	This class is suitable for recreation which generally involves low to-moderate user densities. Recreation opportunities include those permitted in Class C plus: -land-sailing on dry lakes -non-competitive vehicle touring and events only on "approved" routes of travel All organized vehicle events, competitive or not, require a permit specifying the conditions of use;	This class is suitable for a wide range of recreation activities which may involve moderate to high user densities. Recreational opportunities include those permitted in Class L. Competitive motorized-vehicle events are limited to "existing" routes of travel and must be approved by the authorized officer. Pit, start, and finish areas must be designated by the authorized officer. All competitive events and organized events having 50 or more vehicles require permits.	This class is suitable for recreation activities which generally involve high user densities. A wide array of recreational opportunities will be found in this class. Off-road-vehicle play will be allowed where approved in open areas. Uses permitted are the same as Class M; in addition, motorized-vehicle play is allowed in areas designated "open." All aspects of competitive events will be permitted ex-

landfilling provided that BLM transfers out of public ownership lands on the project site to private ownership and provided that the project is implemented in a manner consistent with the air quality, water quality, cultural and paleontological, Native American, vegetation, wildlife, and fire suppression guidelines cited above.

Within the CDCA is a management program which addresses special areas. These areas are called Areas of Critical Environmental Concern (ACEC) and are identified in Figure 3. The FLPMA, in Section 103(a), defines an ACEC as an area ". . . within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." The Chuckwalla Bench ACEC, located in the southeastern portion of the CDCA (see Figure 3), was established to manage an area of high-density desert tortoise habitat. Approximately 11.5 miles of the Eagle Mountain rail line pass through the Chuckwalla Bench ACEC and 2.5 miles pass through the Salt Creek ACEC.

4. Existing Land Use Plans and Policies in Surrounding Areas

The use of land which surrounds the project site is controlled by a number of plans and policies of the agencies discussed below.

a. County of Riverside

Within the Chuckwalla Land Use Planning Area, power plant development, highway commercial services, rail transportation, and availability of irrigation water are identified as area characteristics. Constraints to land use in the area are identified as its remote location, lack of infrastructure, large expanses of desert held by the BLM, and the Kaiser mine closure. The Desert Center/Lake Tamarisk area is identified and land use policies related to continuance of existing conditions are provided. The Open Space and Conservation Map indicates that the area surrounding Eagle Mountain is currently designated Mineral Resources, Desert Areas, and Mountainous Areas, and ANDOS (see Figure 14). The ANDOS extend over the entire townsite area, including all land north of the rail line loop adjacent to the south boundary of the project site.

Also, within the townsite, a Public Use Permit has been approved by the County to allow the operation of a State Department of Corrections return-to-custody facility under private contract management for rehabilitation of adult parole violators. The facility is located on 11.9 acres at the northwest corner of Highland Drive and Court Street and houses 271 inmates, but has approval for 200 more inmates in second-phase construction and an additional 100 inmates in a third-phase program. Inmates are housed in existing and converted structures totaling 70,000

square feet at buildout. The facility includes dormitories, classrooms, food and health services, and workshops and is linked to the utilities and services available to the townsite. The Public Use Permit establishes conditions for operation, including reestablishment of fire services in Eagle Mountain.

b. Bureau of Land Management

Multiple Use Class L (Limited Use) is intended to protect sensitive, scenic, ecological, and cultural resource values. Public lands designated Class L are managed for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. Compared to the Class M guidelines cited above, Class L operates under the same air quality, water quality, cultural and paleontologic, Native American, fire management, vegetation, mineral exploration and development, waste disposal, and wildlife species and habitat guidelines as Class M. In addition, Class L guidelines allow for the use of railroad and trams to serve authorized uses if no other viable alternative is possible. Railroads and trams may be allowed on Class M and I lands.

Multiple Use Class C (Controlled Use) is intended as a wilderness management designation which identifies areas "preliminarily recommended" as suitable for wilderness designation by Congress. This classification also provides management guidelines to insure preservation of wilderness characteristics until such a congressional designation is made. These guidelines restrict grazing, vehicle access, and most kinds of facility development.

The area is also part of a larger bill currently being considered by Congress to enlarge Joshua Tree National Monument and change its status to a National Park. Under this proposed legislation, the Eagle Mountain wilderness study area would be transferred to the National Park Service and given Wilderness Area status, to be managed in a way similar to that of the existing Pinto Basin Wilderness Area to the north (see discussion under National Park Service below). Figures 54 and 55 show the two alternative boundary adjustment proposals for enlarging Joshua Tree National Monument.

Independent of this proposed legislation, portions of the northwest slopes of the Eagle Mountains bounded on the north and west by Joshua Tree National Monument are being proposed for a boundary adjustment, involving administrative transfer of land from the BLM to National Park Service jurisdiction as an addition to the monument. Figures 54 and 55 show the Pinto Basin boundary adjustment proposal and an Eagle Mountains alternative being considered by these federal agencies (BLM 1988:2-14, 2-23).

c. National Park Service

The project site is located about a mile and a half south of the boundary of Joshua Tree National Monument. This large and popular desert park is administered by the National Park Service

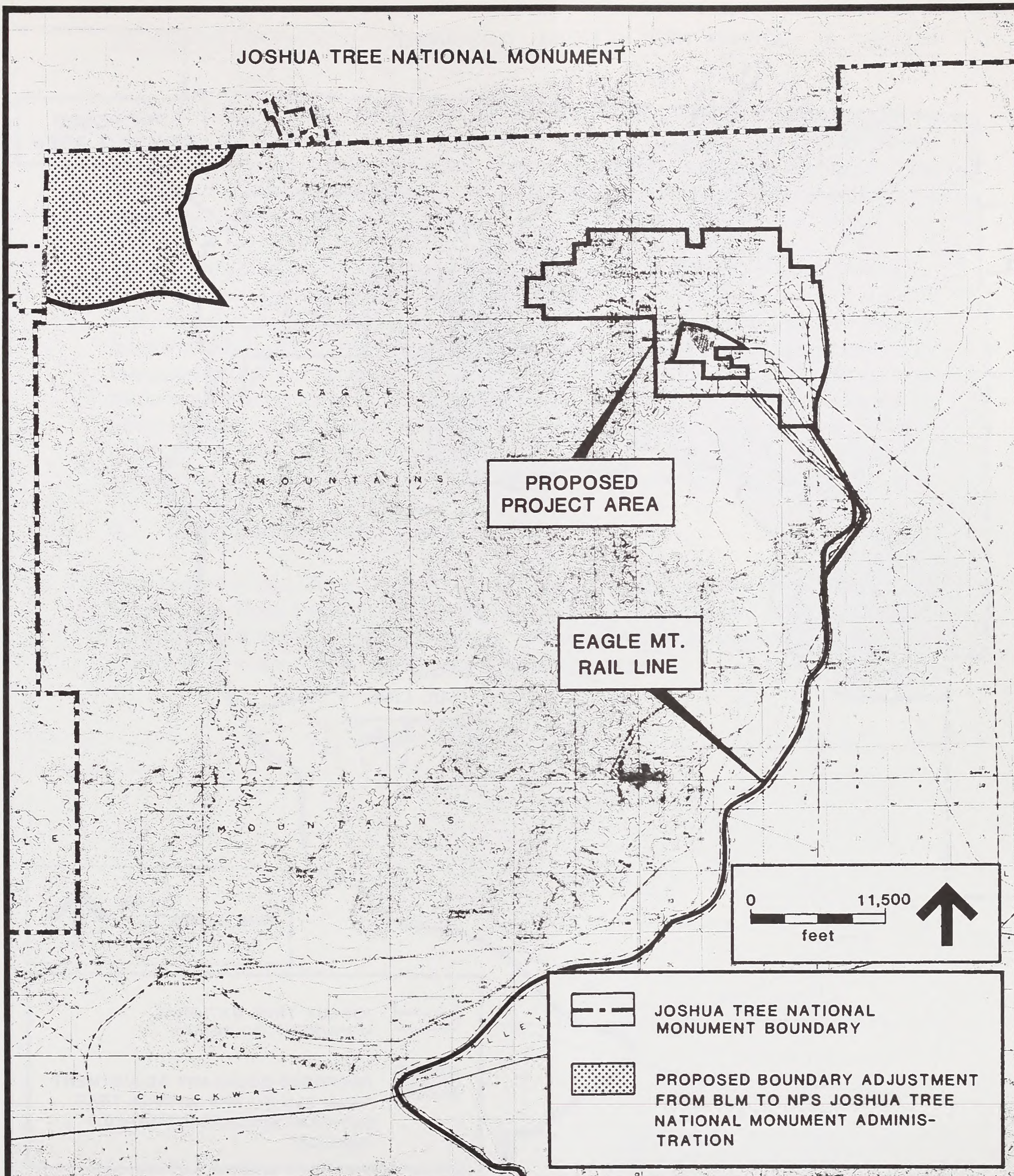

FIGURE 54. "PINTO BASIN" ADJUSTMENT PROPOSAL

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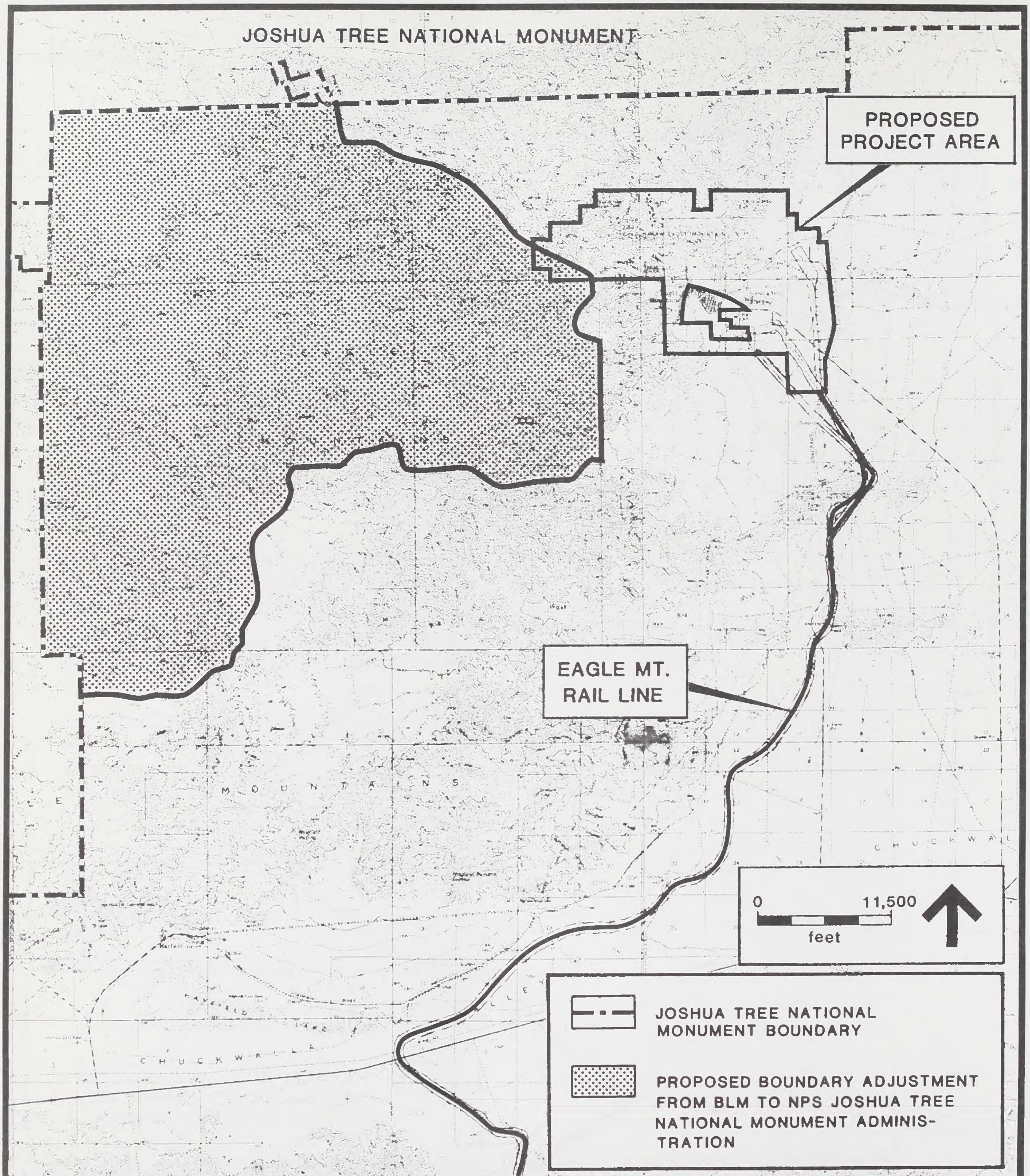

FIGURE 55. "EAGLE MOUNTAINS ALTERNATIVE" BOUNDARY ADJUSTMENT PROPOSAL

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(NPS), U.S. Department of the Interior. Joshua Tree National Monument was established by proclamation August 10, 1936, to preserve a representative and scenic portion of the Mojave and Colorado deserts for the benefit and enjoyment of present and future generations. The Statement for Management, approved in 1978, establishes land management policies and objectives for the monument.

The part of the monument in proximity to the project site is designated as a Natural Environment and Wilderness Subzone. Lands within the Natural Environment Subzone (two percent of adjacent lands) are to be managed as follows: "The natural resources and natural processes remain largely unaltered by human activity except for approved developments essential for management, use and appreciation. Developments are limited to park roads, picnic areas, backcountry parking areas, and three borrow pits." Lands within the Wilderness Subzone (98 percent of adjacent lands) also remain largely unaltered by human activity except for 1.5 miles of dirt service road. No other development is allowed. For further discussion of Wilderness Subzone see the Visual, Recreation, and Wilderness Resources section of this draft EIS/EIR.

d. Metropolitan Water District

Management of the Colorado River Aqueduct, which runs adjacent to the project site, is by the Metropolitan Water District. The primary policy mandate which guides MWD operations is the continued delivery of high-quality water for domestic use by its member agencies and the population of much of the Los Angeles and San Diego areas.

F. Surface Drainage/Flooding

The proposed project is located in an arid climate where normal annual rainfall is approximately three inches per year. However, the storm weather pattern is sometimes characterized by heavy rains of short duration. Figure 56 shows the total area of the watershed, about 6,400 acres, which consists mainly of undeveloped areas sparsely covered with desert vegetation such as chaparral and sage. The topography is predominantly mountainous with steep slopes and vertical cliffs. The overall drainage flow pattern is from west to east.

Several normally dry creek beds exist in the surrounding area. Typically, water is present in these drainage courses only during or shortly after rain events. Most of the area drains to Eagle Creek, a large dry creek bed on the southeastern side of the proposed site. Eagle Creek originally drained southeasterly through the town of Eagle Mountain to an outlet area at the intersection of Yucca Drive and Kaiser Road. The flood control system through the town still exists and consists of the following improved and unimproved flow paths:

1. An unlined channel adjacent to and on the south side of the electrical substation.

2. A bridge at the rail crossings just downstream of the electrical substation.

3. An unlined channel on the eastern side of the private road. Some sections of this channel are well defined and include ungrouted riprap embankments, while other sections are poorly defined and have no embankments.

The unimproved areas include a natural creek bed upstream of the electrical substation, and an area of probable sheet flow between the railroad bridge and the private road. Drainage flows leave the developed area on the eastern side of the private road and travel over the county/private road fork. No obstructions or improvements exist in the drainage flow path for several thousand feet. A private aircraft landing strip and the underground Colorado River Aqueduct with its adjacent access road are the only improved areas further to the east.

After a heavy storm in 1976, the Kaiser Mining Company built a dike across the Eagle Creek flow line near the mouth of the confluence with an unnamed tributary of Eagle Creek. The purpose of the dike was to protect the mine processing plant and town areas by forcing flows to the northern side of the main haul road and into the East Pit. During a heavy storm in 1978, the rainwater drained into the East Pit rather than through the town. Although the portion of the dike across the main haul road has been removed, the mouth of the major drainage confluence is still filled. The creek neck, downstream from the dike, has also been filled.

During storms under existing conditions, Eagle Creek flows will cross to the north side of the main haul road at the mouth of the major confluence and continue in a downstream manner, either in or adjacent to the northern road edge. Presently, water drains into the East Pit.

SOURCE: SCS ENGINEERS

FIGURE 56. EAGLE MOUNTAIN DRAINAGE AREA

G. Biology

A biological survey of the Eagle Mountain landfill project site, including the Eagle Mountain rail line right-of-way and truck route corridors proposed for access to the project site, was conducted in October and November, 1989, and January and June, 1990 (a total of 69 person-days). Two special surveys were conducted for desert pupfish and sensitive bats in May and June 1990. The surveys for desert pupfish were conducted by the California Department of Fish and Game. A second bat survey for winter roost sites was carried out in November and December of 1990. A complete biological technical report on the proposed project is included as Appendix F.

This biology section summarizes the technical report and covers existing biological resources and the ecology of the Eagle Mountains and the desert along the Eagle Mountain rail line right-of-way. Sensitive resources not observed but which could occur on the site are included in the discussion. Impacts and mitigations to biological resources from the proposed project are discussed under Section IV.G. of this document.

1. Existing Conditions

a. Vegetation

The project is located within the transition zone between the Mojave and Colorado deserts (a division of the Sonoran Desert). Three vegetation types occur within the survey limits of the project: Sonoran creosote bush scrub, desert dry wash woodland, and desert chenopod scrub. The most prominent community type represented in the study area is the Sonoran creosote bush scrub. This vegetation type is common on nearly all the lower slopes, bajadas, and sandy flats. A small freshwater marsh occurs along the railroad.

Figures 57a through 57e show the existing vegetation along the Eagle Mountain rail line and on the Kaiser Steel Resources properties to be offered in the land exchange. Figures 58a and 58b show the existing vegetation along Eagle Mountain Road, its proposed extension, and the spur area to the Phase II container handling yard. Figure 59 shows the existing vegetation on the Eagle Mine property.

In the project area, creosote bush scrub varies in density and dominance of species depending upon two topographic features, the steep rocky slopes of the desert mountains and the flat areas of desert pavement. The steep rocky slopes of the Eagle Mountains, Orocopia Mountains, and Chocolate Mountains have lower densities of the common shrubs as the terrain becomes steeper and rockier. The lower density of shrubs is a direct result of the depth and availability of soil, which decrease as rockiness increases. Desert pavement areas also lack sufficient soil to support many species. Pavement areas are characterized by the presence of a flat, stony surface

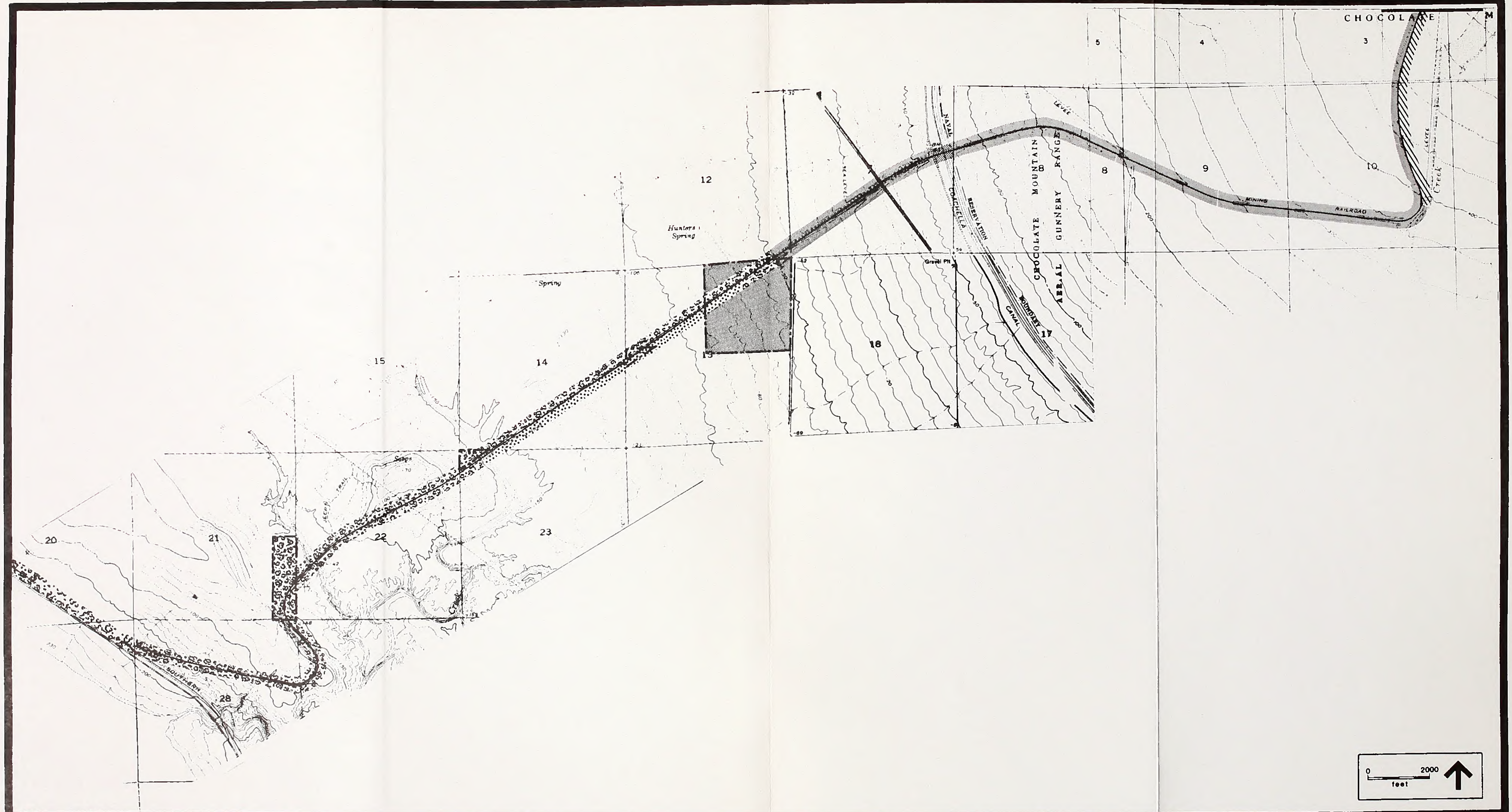

FIGURE 57a. EXISTING VEGETATION ON THE EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 1 OF 5

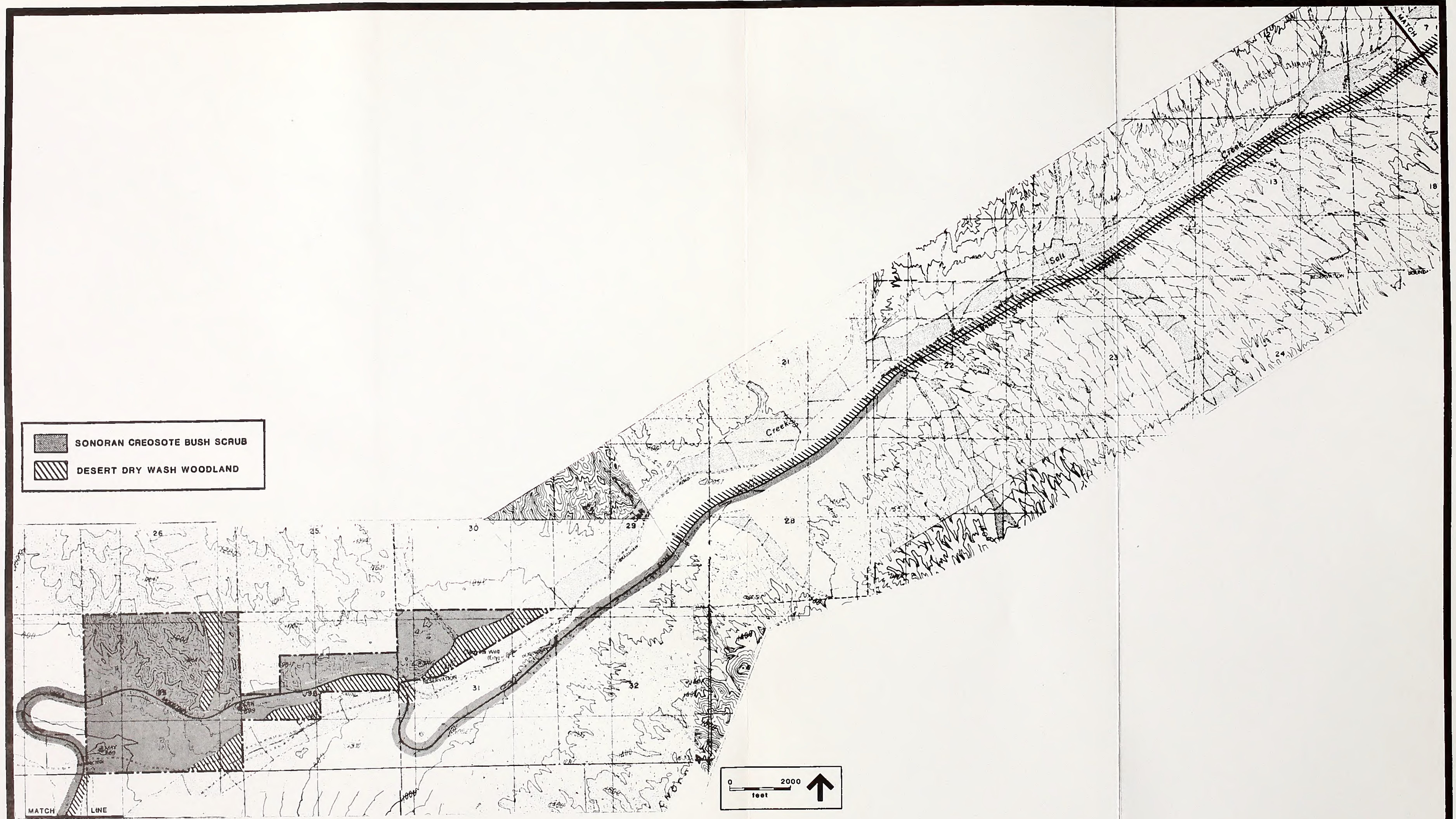

FIGURE 57b. EXISTING VEGETATION ON THE EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 2 OF 5

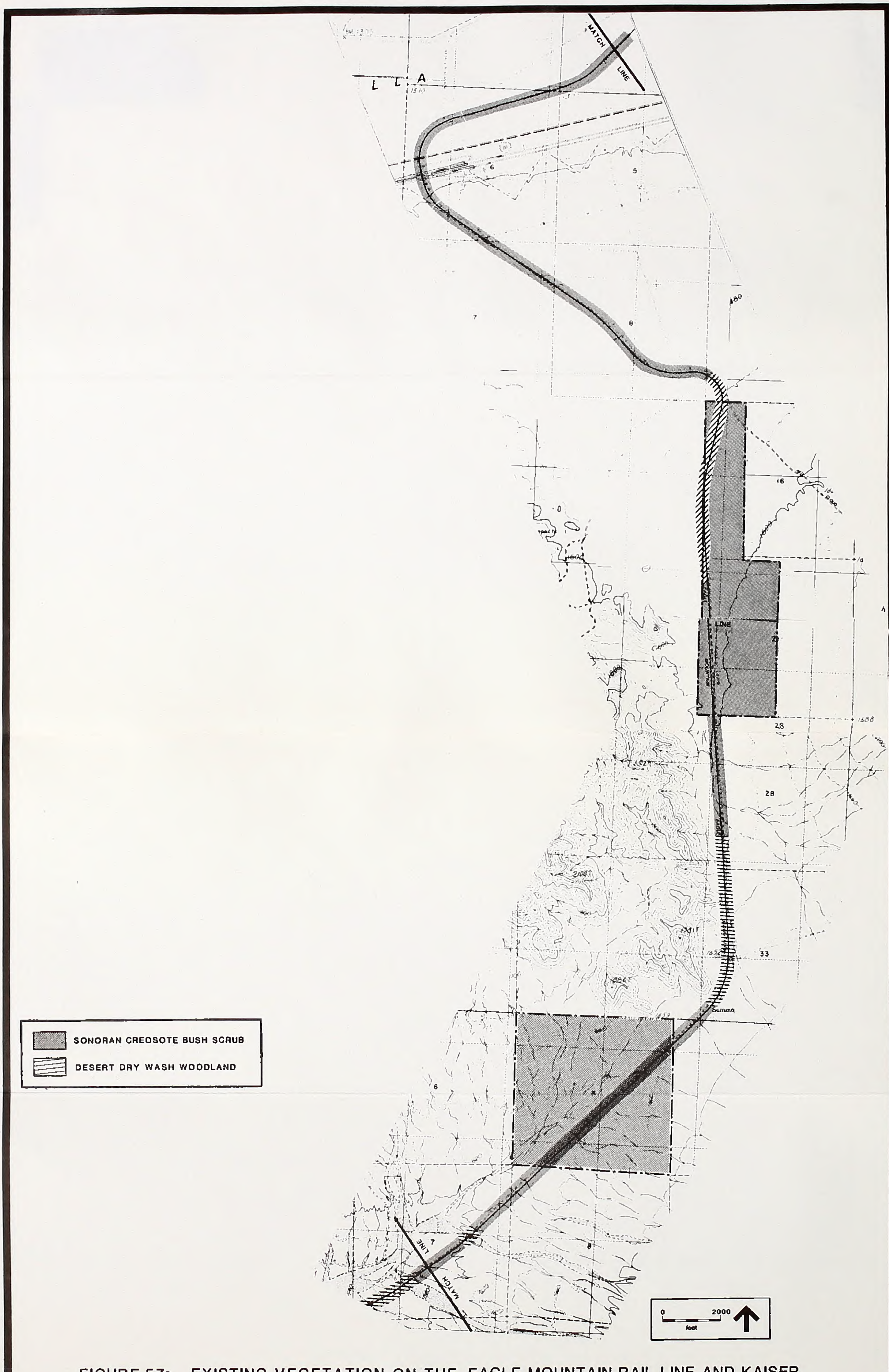

FIGURE 57c. EXISTING VEGETATION ON THE EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 3 OF 5

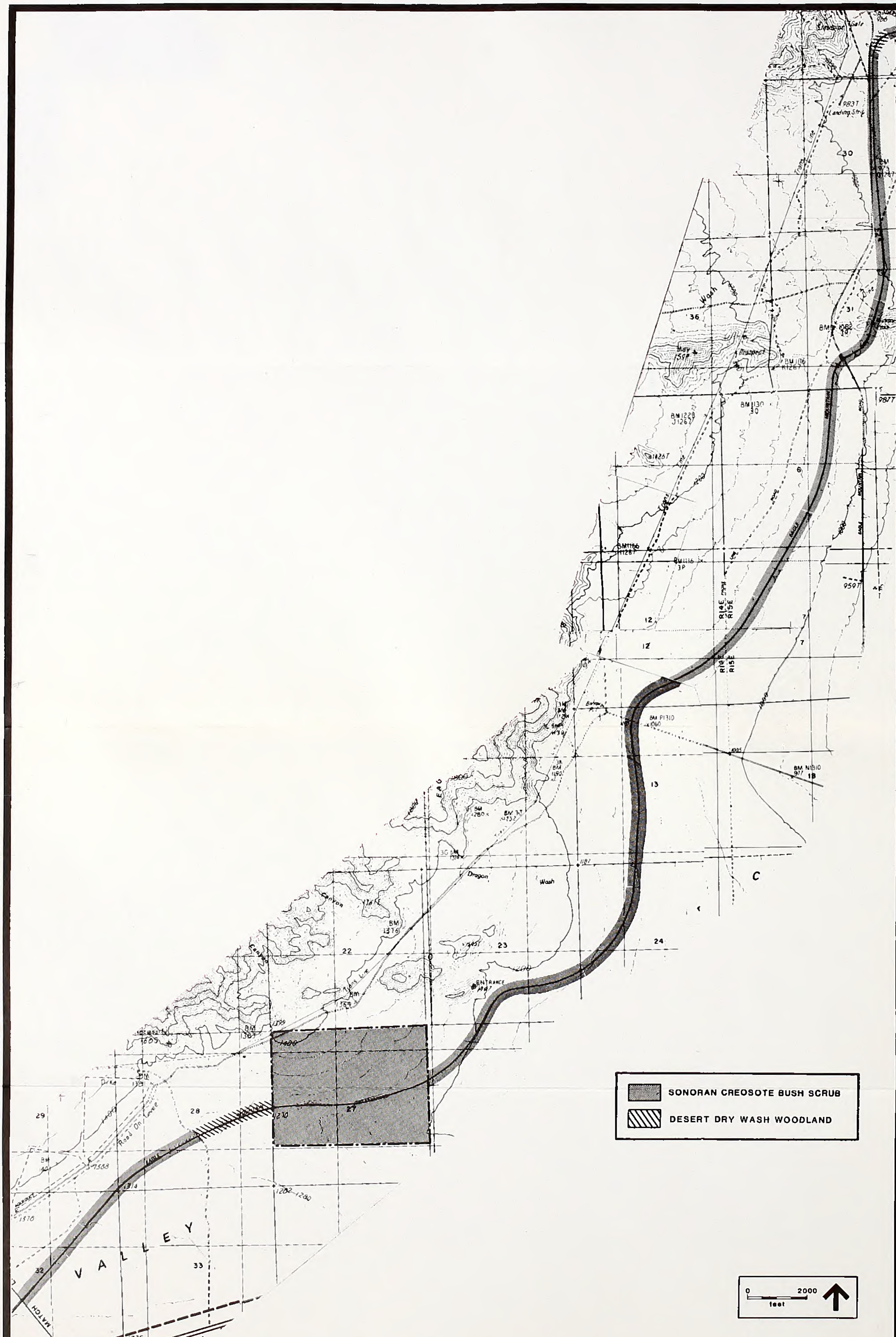

FIGURE 57d. EXISTING VEGETATION ON THE EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 4 OF 5

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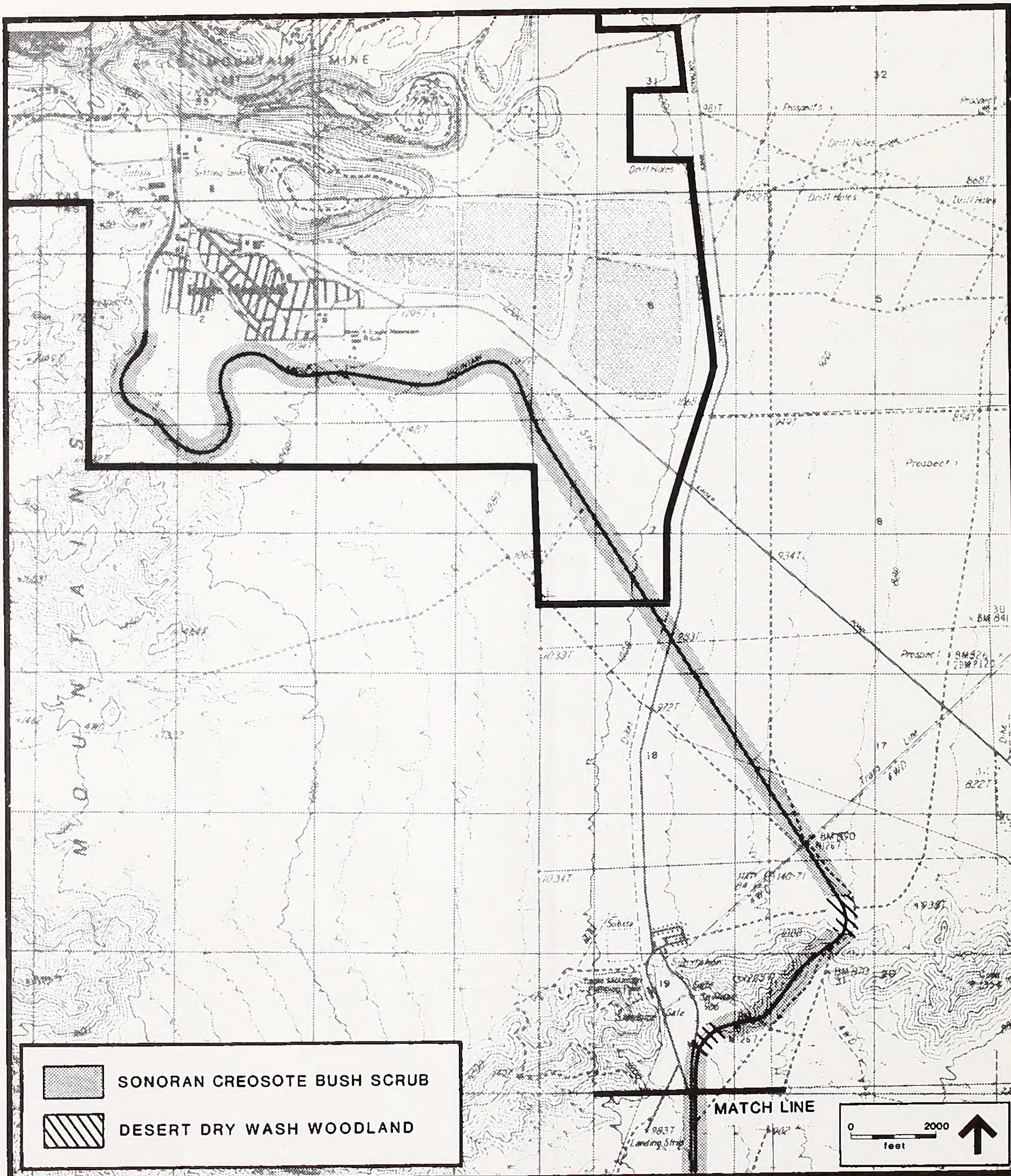

FIGURE 57e. EXISTING VEGETATION ON THE EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 5 OF 5

RECON

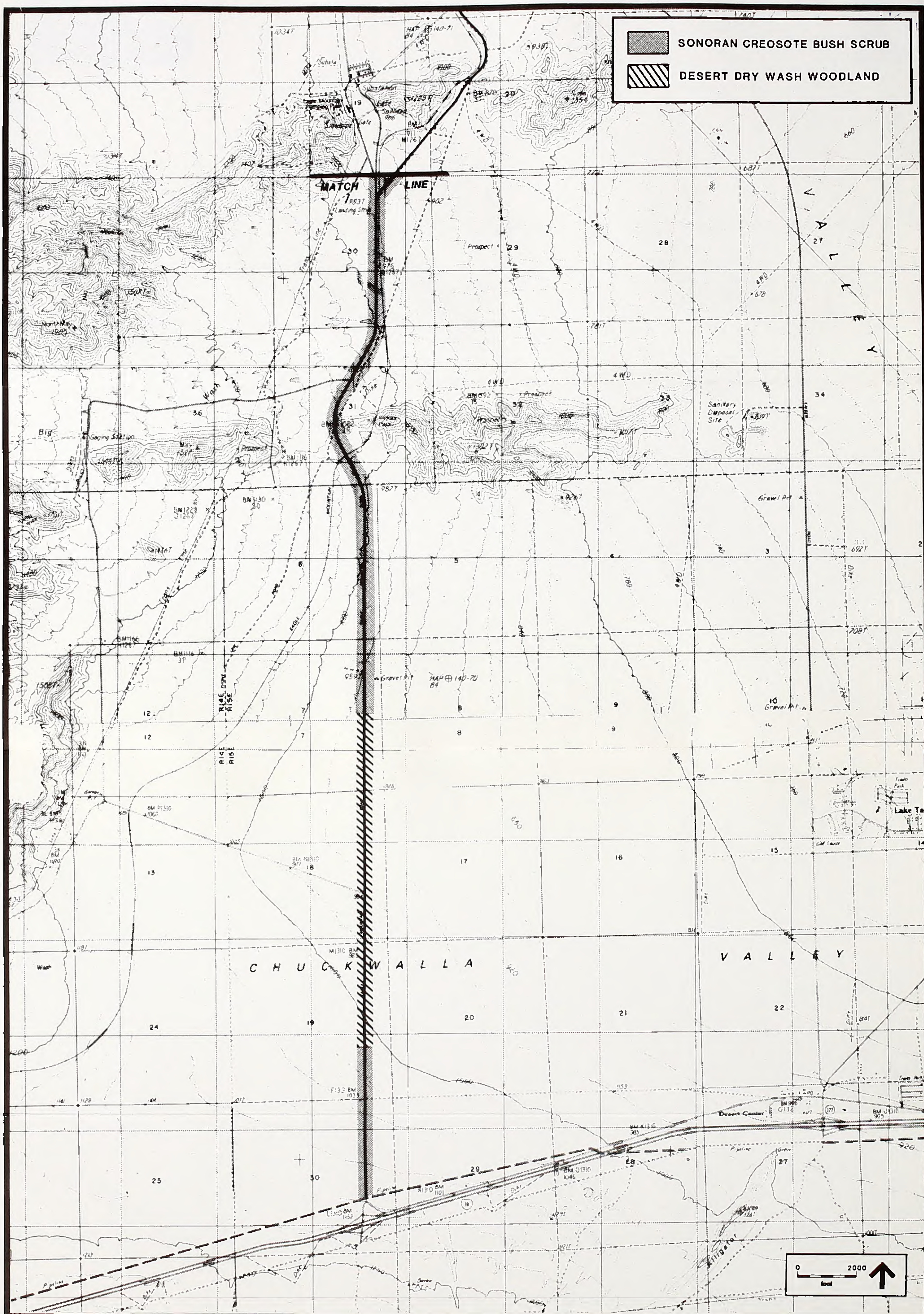

FIGURE 58a. EXISTING VEGETATION ON EAGLE MOUNTAIN ROAD AND SPUR LOCATION
MAP 1 OF 2

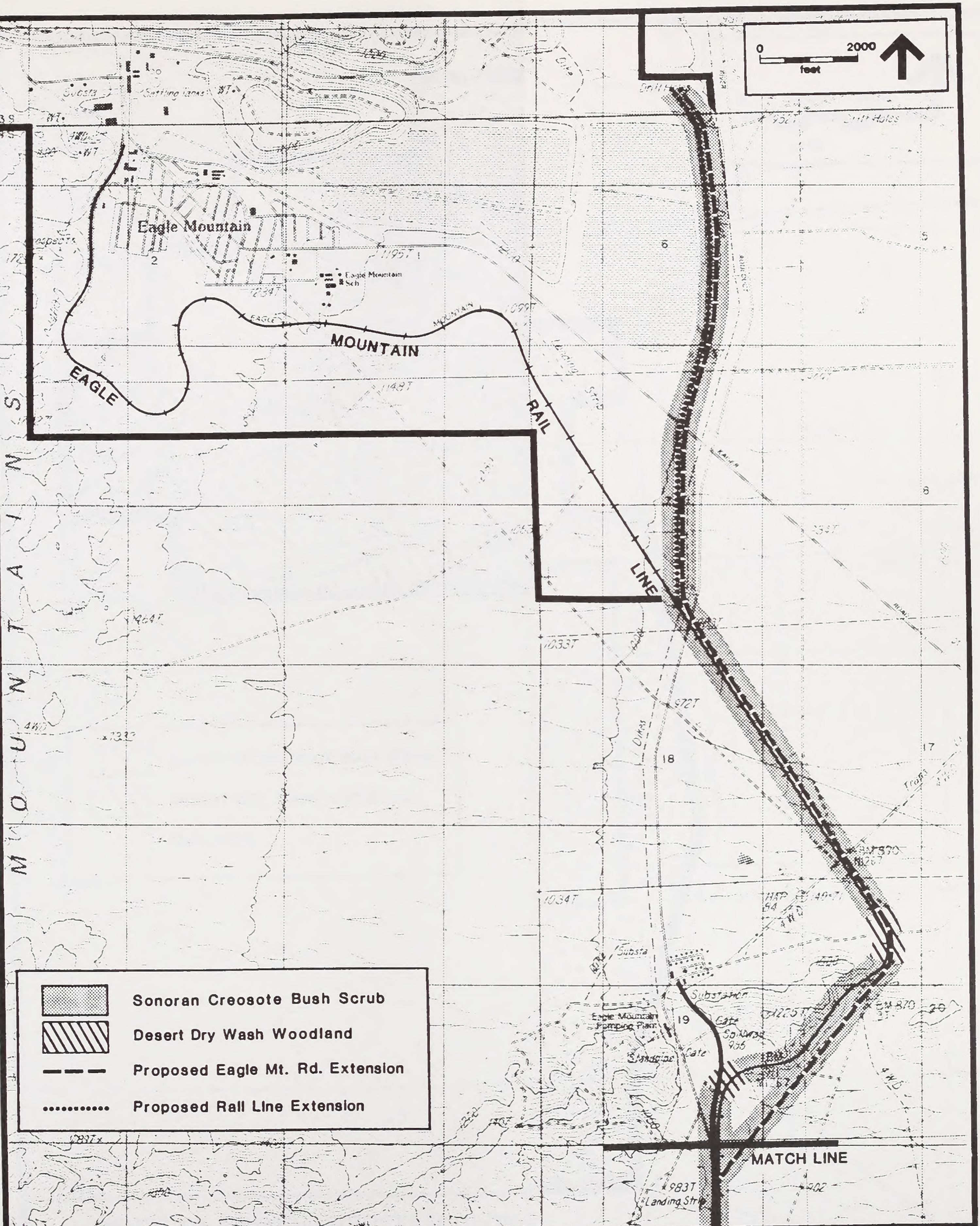

FIGURE 58b. EXISTING VEGETATION ON EAGLE MOUNTAIN ROAD EXTENSION AND RAILROAD SPUR MAP 2 OF 2

RECON

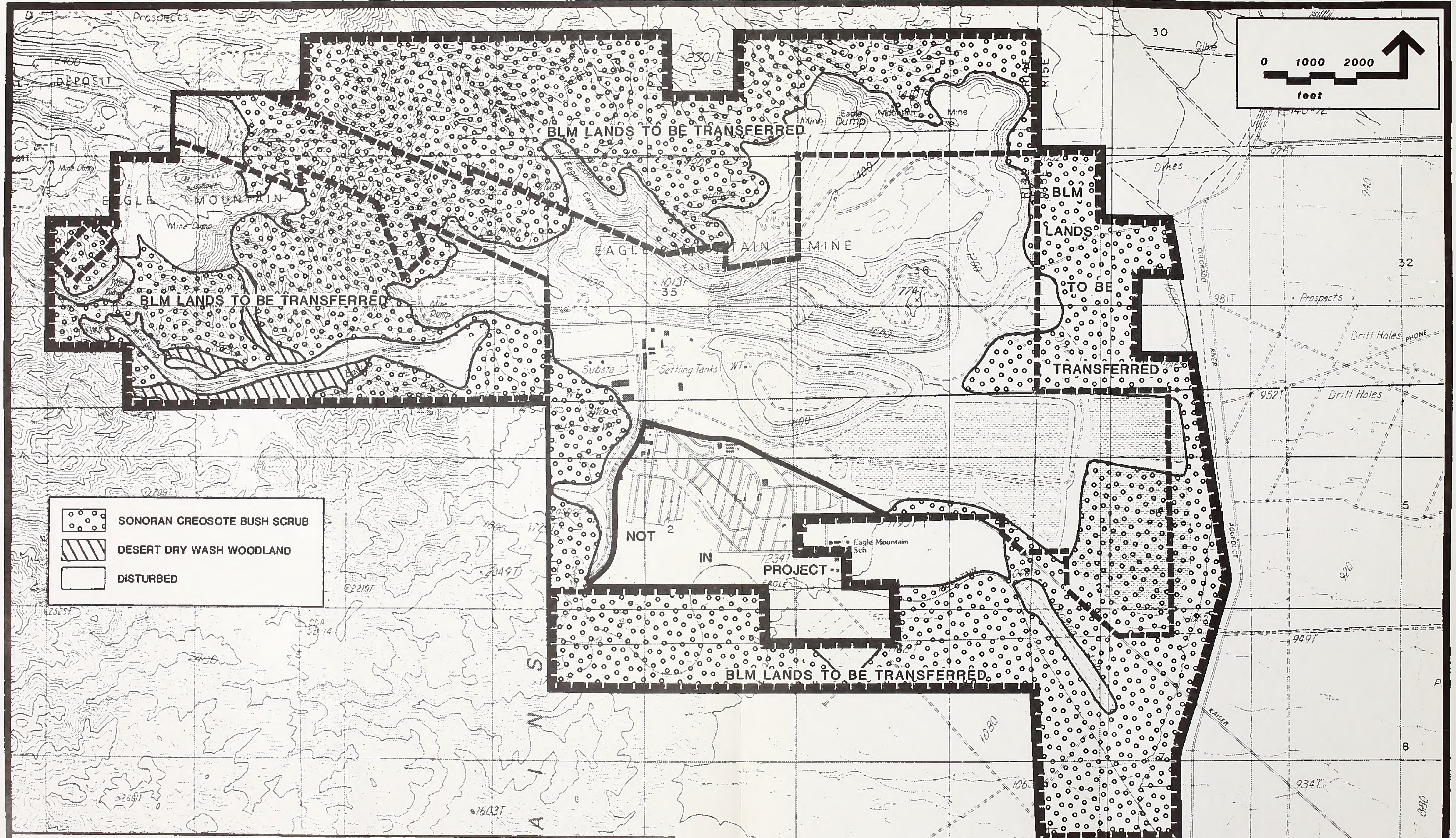

FIGURE 59. EXISTING VEGETATION ON THE PROPOSED EAGLE MOUNTAIN LANDFILL PROJECT SITE

that has developed a "desert varnish" on the rocks due to long exposures to the desert sun and heat. Soils are typically shallow beneath the rocky surface and plants such as creosote are often stunted when growing in pavement areas. Washes that occur in desert pavement landscapes have deeper soils and thus are able to support larger and more diverse plants.

The many washes and drainages dissecting the bajadas typically support a variety of desert tree species. Desert dry wash woodland vegetation is best exemplified in Salt Creek along the Eagle Mountain rail line north of the Coachella Canal.

The vegetation in washes and drainages changes as the elevation drops below sea level south of the Coachella Canal towards the Salton Sea. The soils in this area become increasingly alkaline, limiting the distribution of the more common wash species. The lower portions of the bajada from just below sea level to the Salton Sea are vegetated with alkali- and salt-tolerant chenopod scrubs. Desert chenopod scrub occurs as a gradient of plant communities that coincides with the increasing salinity and alkalinity of the soils. The plant communities of the desert chenopod scrub range from desert saltbush scrub at elevations near sea level to desert sink scrub in the wet alkaline sink areas below sea level.

Freshwater marsh vegetation occurs within the railroad right-of-way south of Coachella Canal (see Figure 57a), including the area in Salt Creek under the trestle. This community is found along a continuous, parallel, 3.5-mile stretch of railroad from the Hunter's Spring area to the Salt Creek railroad trestle.

b. Dominant Plants

The most prominent community type represented in the study area is the Sonoran creosote bush scrub common on nearly all the lower slopes, bajadas, and sandy flats in the project study area. The dominant plant in the community is the creosote bush (*Larrea tridentata*). Creosote bush was observed in monotypic stands in some areas throughout the project area; however, it was commonly associated with two other shrub species, cheese-bush (*Hymenoclea salsola*) and bur-sage (*Ambrosia dumosa*). Smaller subshrubs found in spaces between the dominant shrubs include desert straw (*Stephanomeria pauciflora*), sweet bush (*Bebbia juncea*), jojoba (*Simondsia chinensis*), white and little-leaved ratany (*Krameria grayi* and *K. parvifolia*, respectively), and shad scale (*Atriplex canescens*).

The lower bajadas and flats within this community type had a greater abundance of cactus species than the Salton Sink or steep rocky slopes of the Eagle Mountains. The most common species of cacti observed are the golden cholla (*Opuntia echinocarpa* var. *echinocarpa*) and pencil cholla (*Opuntia ramosissima*). Beavertail cactus (*Opuntia basilaris*), hedgehog cactus (*Echinocereus engelmannii*), and cottontop cactus (*Echinocactus polycephalus*) also occur in the area, but at much lower densities.

Small areas of Sonoran mixed woody and succulent scrub occur within the area mapped as creosote bush scrub. These localized areas are more common in areas halfway between the Eagle Mountain Mine and the Salton Sea adjacent to Eagle Mountain rail line. This community type is recognized by the presence of larger numbers of individuals of the following species: ocotillo (*Fouquieria splendens*), golden cholla, pencil cholla, Mohave yucca (*Yucca schidigera*), and catclaw shrubs (*Acacia greggii*).

The most common tree species found in the large washes are the smoke tree (*Dalea spinosa*), palo verde (*Cercidium floridum*), and ironwood (*Olneya tesota*). Variation in dominance between these species was observed depending on the size and location of the wash. Smaller washes on the upper bajadas tended to have only palo verde trees, while washes and drainages in the steep mountains often lacked trees. Shrub and subshrub species common in the washes and drainages included desert-lavender (*Hyptis emoryii*), sweet bush, cheese-bush, jimson weed (*Datura metaloides*), catclaw, and rush milkweed (*Ascelpias subulata*).

Drainages and washes near the foothills of the steep mountains and in the mountains surrounding the proposed Eagle Mountain landfill site have very few individuals of trees, most of these being palo verde trees. These drainages and small washes are dominated by the desert-lavender bush. A common subshrub in these mountain drainages is arrow leaf (*Pleurocoronis pluriseta*) along with rose mallow (*Hibiscus denudatus*) and sweet bush.

Alkaline drainages and washes south of the Coachella Canal are often vegetated with tamarisk scrub dominated by tamarisk trees (*Tamarix* sp.) and arrowweed scrub dominated by shrubs of arrowweed (*Pluchea sericea*). Wet drainages just south of the Coachella Canal have localized areas of cattail (*Typha* sp.) and iris-leaved rush (*Juncus xiphioides*). A few fan palms (*Washingtonia* sp.) have been introduced into these drainages.

Wetland vegetation in alkaline sink areas consists of low-growing perennial plants adapted to tolerate high alkalinities and salt concentrations. The drier margins of these areas are vegetated predominantly with salt grass (*Distichlis spicata*) and various saltbushes (*Atriplex* spp.), while the wetter areas in the lower portions of the sink are either dominated by iodine bush (*Allenrolfea occidentalis*) and Torrey sea-blite (*Suaeda torreyana*) or completely devoid of any vegetation. The bare areas of the sink had a salt crust on the surface of the soil at the time of the survey.

Desert saltbush scrub communities within the chenopod scrub are dominated by a variety of saltbush species that include shad scale, wheelscale (*Atriplex elegans*), desert-holly (*Atriplex hymenelytra*), and allscale (*Atriplex polycarpa*). The desert sink scrub community of the chenopod scrub is dominated by iodine bush and Torrey sea-blite along with scattered individuals of various saltbushes. This community type occurs in areas of poorly drained soils with high salinity and alkalinity where a salt crust often forms on the surface of the ground. Inclusions of desert greasewood scrub and alkali-seep areas are found within the desert sink

scrub community. Desert greasewood scrub is similar in species composition to the desert sink scrub; however, the densities and overall diversity of species is much lower. Alkali-seep areas are dominated by salt grass and other salt-tolerant herbs where soils are permanently moist.

c. Wildlife

A wide diversity of wildlife species are supported by habitat that ranges from steep, rough terrain to gently sloping bajadas. In the area surrounding the proposed Eagle Mountain landfill site, steeper rocky areas are relatively undisturbed. Overall, the area is generally high-quality Colorado Desert creosote bush scrub habitat for a wide variety of large, far-ranging species as well as smaller, more restricted species.

Wetland and alkaline sink habitats south of the Coachella Canal supported most of the same wildlife species found to the north. Evidence of small mammals was sparse, but the amount of cover probably helped to support the same number and species of birds seen throughout the project. Large mammals including coyote and mule deer were also present in these areas. Mesic areas support even more species than the other drier desert areas. For example, waterfowl and wetland-associated mammals were observed while surveying the tributary of Salt Creek.

On the proposed Eagle Mountain Mine landfill site (including private and public selected lands), 4 species of reptiles, 8 mammals, and 21 bird species were observed. Reptiles most commonly observed were side-blotched lizard (*Uta stansburiana*) and long-tailed brush lizard (*Urosaurus graciosus*). Commonly observed or detected mammals were Nelson's bighorn sheep, black-tailed hare (*Lepus californicus*), and coyote (*Canis latrans*). Common birds in the undisturbed portions of the proposed landfill site include rock wren (*Salpinctes obsoletus obsoletus*), verdin (*Auriparus flaveceps acaciarum*), black-throated sparrow (*Aimophila bilineata deserticola*), and white-crowned sparrow (*Zonotrichia leucophrys*). These birds are common inhabitants of desert regions of southern California. The disturbed portions of the Eagle Mountain site supported fewer wildlife species than the natural areas. Species observed included house finch (*Carpodacus mexicanus frontalis*) and the introduced house sparrow (*Passer domesticus*).

Habitat along the proposed Eagle Mountain Road Extension is similar to habitat found on the flatter portions of the proposed landfill site, and species diversity observed did not differ significantly. The Eagle Mountain rail line traverses several microhabitats, as well as creosote bush scrub, which resulted in the observation of additional wildlife species, and the Kaiser Steel Resources properties along the railroad right-of-way being offered to BLM as part of the project's land exchange also contain varied habitats. A total of 7 reptile, 10 mammals, and 29 bird species were observed. Species commonly seen included western whiptail (*Cnemidophorus tigris*), side-blotched lizard, black-tailed hare, desert woodrat (*Neotoma lepida*), kangaroo rat (*Dipodomys* spp.), Gambel's quail (*Callipepla gambelii*), verdin, rock

wren, ruby-crowned kinglet (*Regulus calendula*), and black-throated sparrow. Habitat in washes generally supports the same species, but at increased densities. Wetland habitat within the railroad corridor is too small to support many vertebrate species. The Coachella Canal supports a few nonnative fish species.

2. Biological Resources of Special Concern

a. Habitat Areas

BLM Habitat Management Areas (HMAs) occur in the vicinity of the proposed project and include desert tortoise habitat in the Chuckwalla Bench and Chuckwalla Valley and three Nelson's bighorn sheep management areas. Two BLM Areas of Critical Environmental Concern are also in the vicinity of the proposed project boundary south of Interstate 10. The Eagle Mountain rail line right-of- way passes through the western extent of the Chuckwalla Bench ACEC, which has been established primarily for protection of the desert tortoise, and the Salt Creek ACEC near Ferrum Junction, which has been set aside to protect the desert pupfish and Yuma clapper rail.

Major washes and drainages are considered sensitive habitat areas by CDFG. One major intermittent wash, Eagle Creek, occurs on the proposed landfill site. The Eagle Mountain rail line crosses two permanent watercourses: a tributary of Salt Creek and the Coachella Canal. The railroad right-of-way also crosses approximately 118 washes which flow under the rail line by a system of berms and culverts. Eagle Mountain Road crosses 18 washes. No culvert or berming system was developed for the Kaiser Truck Trail north of the aqueduct pumping station, and it is currently washed out in two places.

b. Wildlife Species of Special Concern Observed

Figure 60a shows the significant wildlife sightings and water sources at the proposed Eagle Mountain landfill property (both private and public selected lands), and Figure 60b shows the significant plant species at the site. Figures 61a and 61b show the sensitive biological resources along Eagle Mountain Road, its proposed extension, and the spur to the Phase II container handling yard. Figures 62a through 62e show the sensitive biological resources along the Eagle Mountain rail line right-of-way and on the Kaiser Steel Resources properties to be offered in the land exchange. Eleven wildlife species of concern were observed or detected by sign in the Eagle Mountain landfill project area or along the associated roads and railroad right-of-way, including desert tortoise, Nelson's bighorn sheep, California leaf-nosed bat, Townsend's big-eared bat, ringtail, American badger, northern harrier, LeConte's thrasher, yellow warbler, yellow-breasted chat, and black-tailed gnatcatcher. A total of 29 wildlife species of concern have the potential to occur in the project area. A short description of the species observed follows.

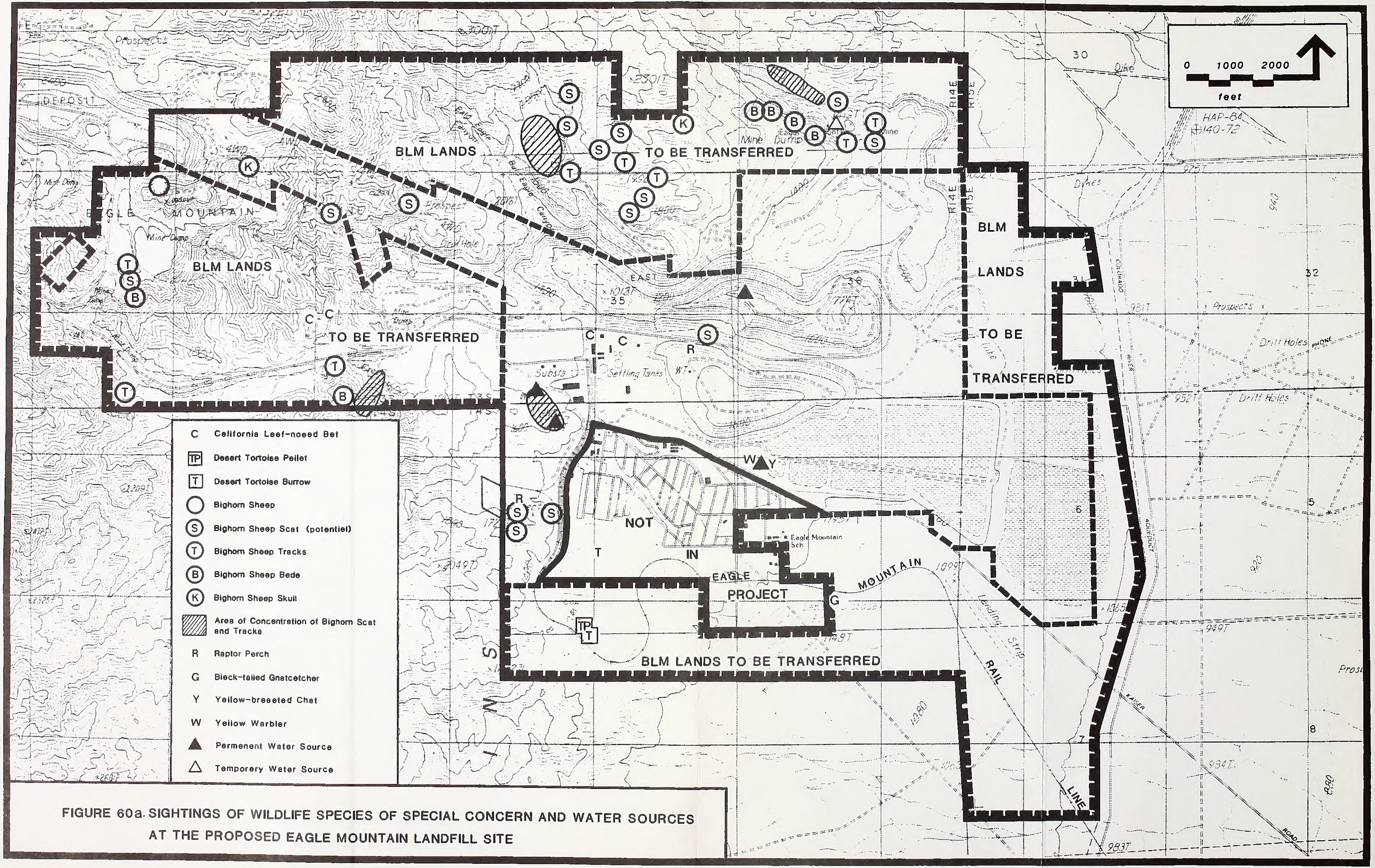

FIGURE 60a. SIGHTINGS OF WILDLIFE SPECIES OF SPECIAL CONCERN AND WATER SOURCES AT THE PROPOSED EAGLE MOUNTAIN LANDFILL SITE

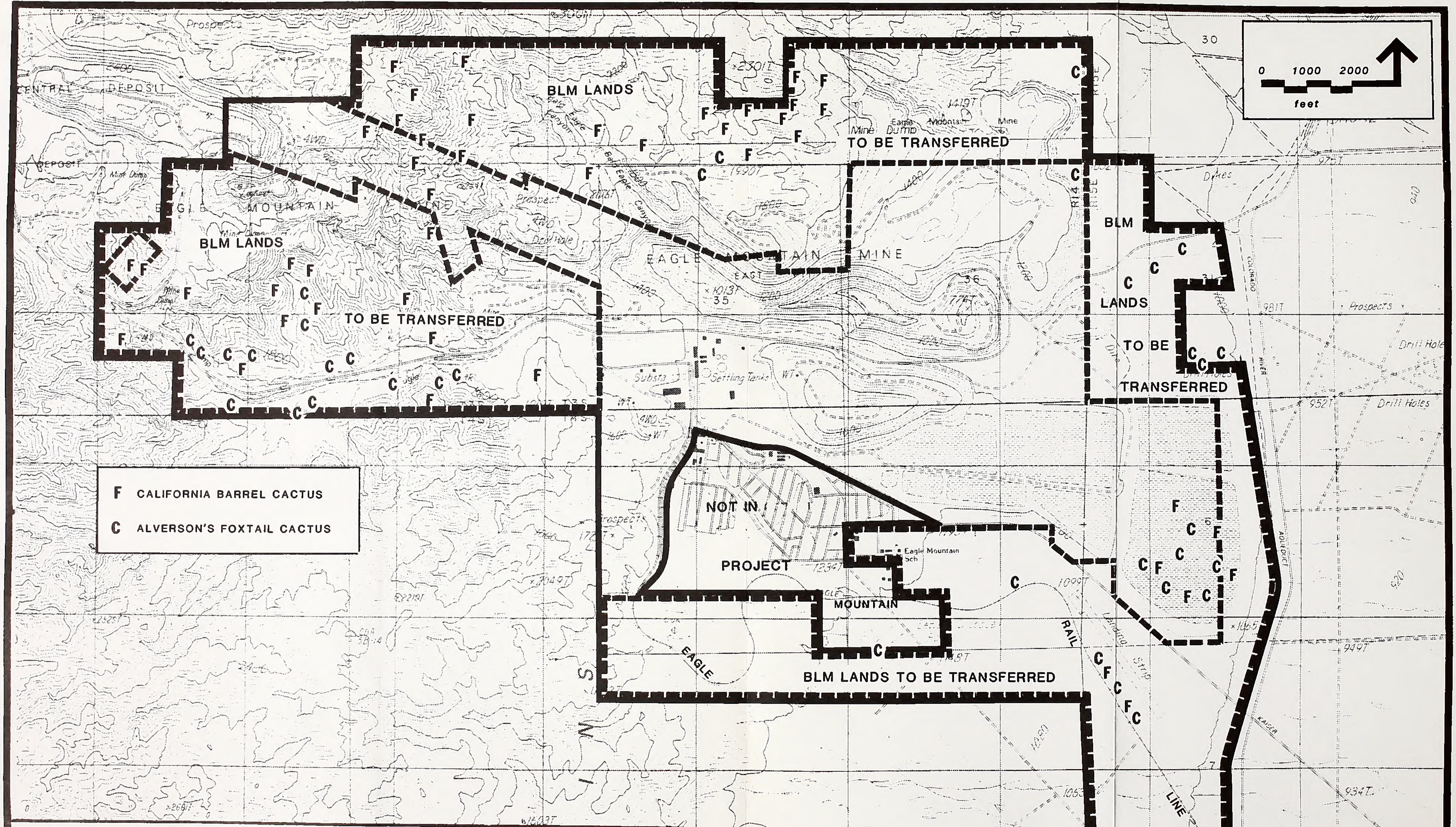

FIGURE 60b. LOCATION OF PLANT SPECIES OF SPECIAL CONCERN AT THE PROPOSED EAGLE MOUNTAIN LANDFILL SITE

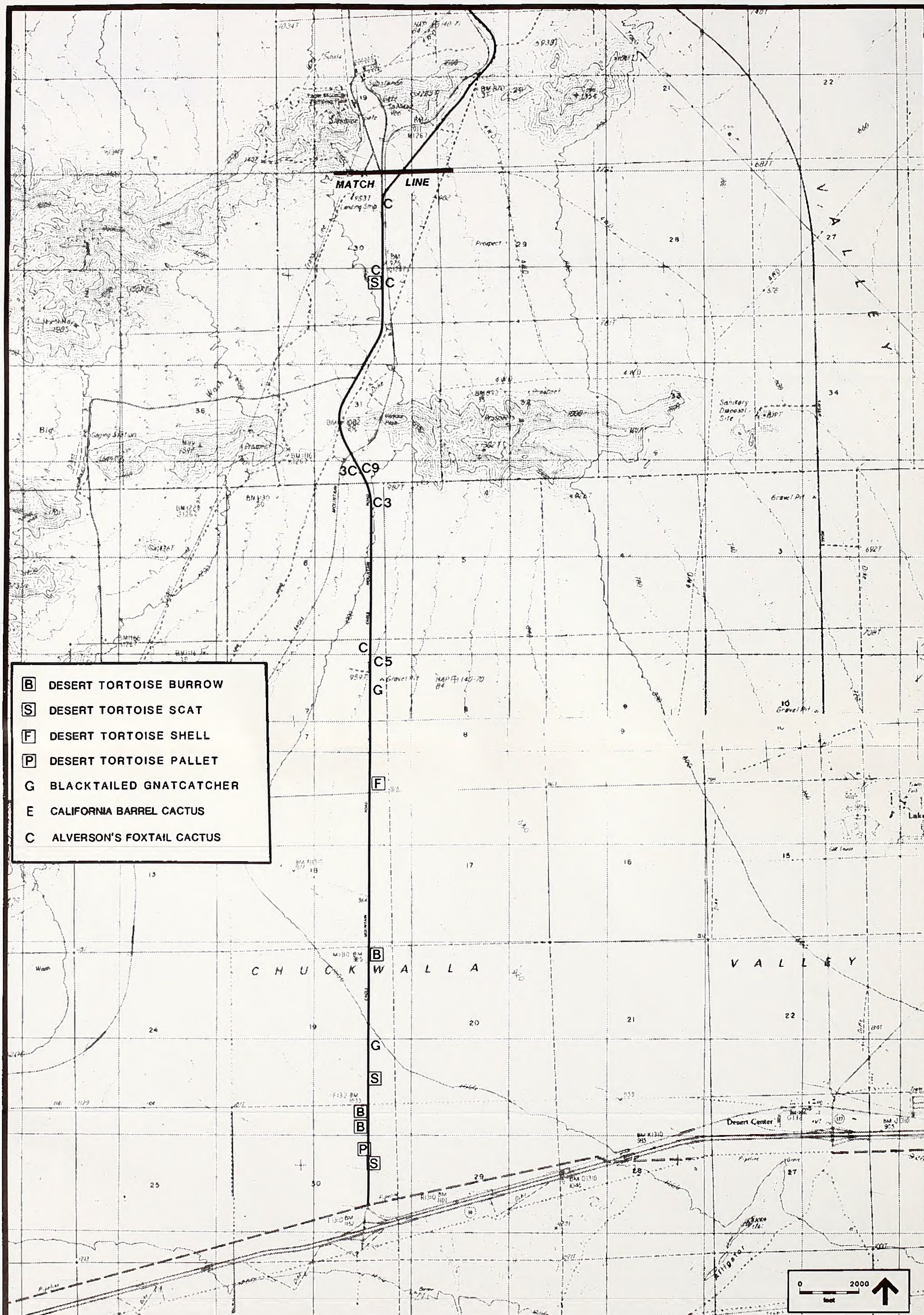

FIGURE 61a. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN ROAD AND SPUR LOCATION MAP 1 OF 2

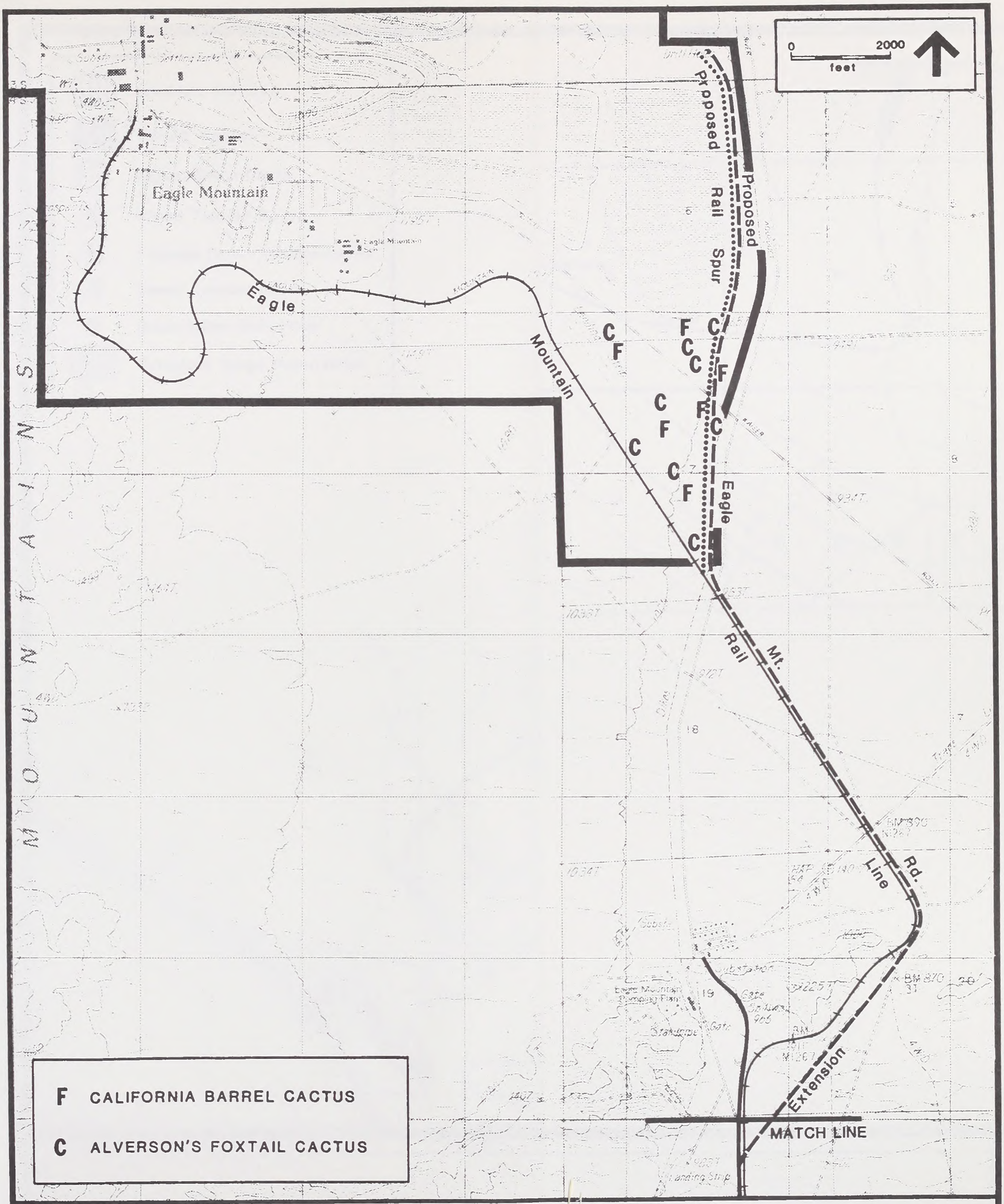

FIGURE 61b. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN ROAD EXTENSION AND RAILROAD SPUR
MAP 2 OF 2

RECON

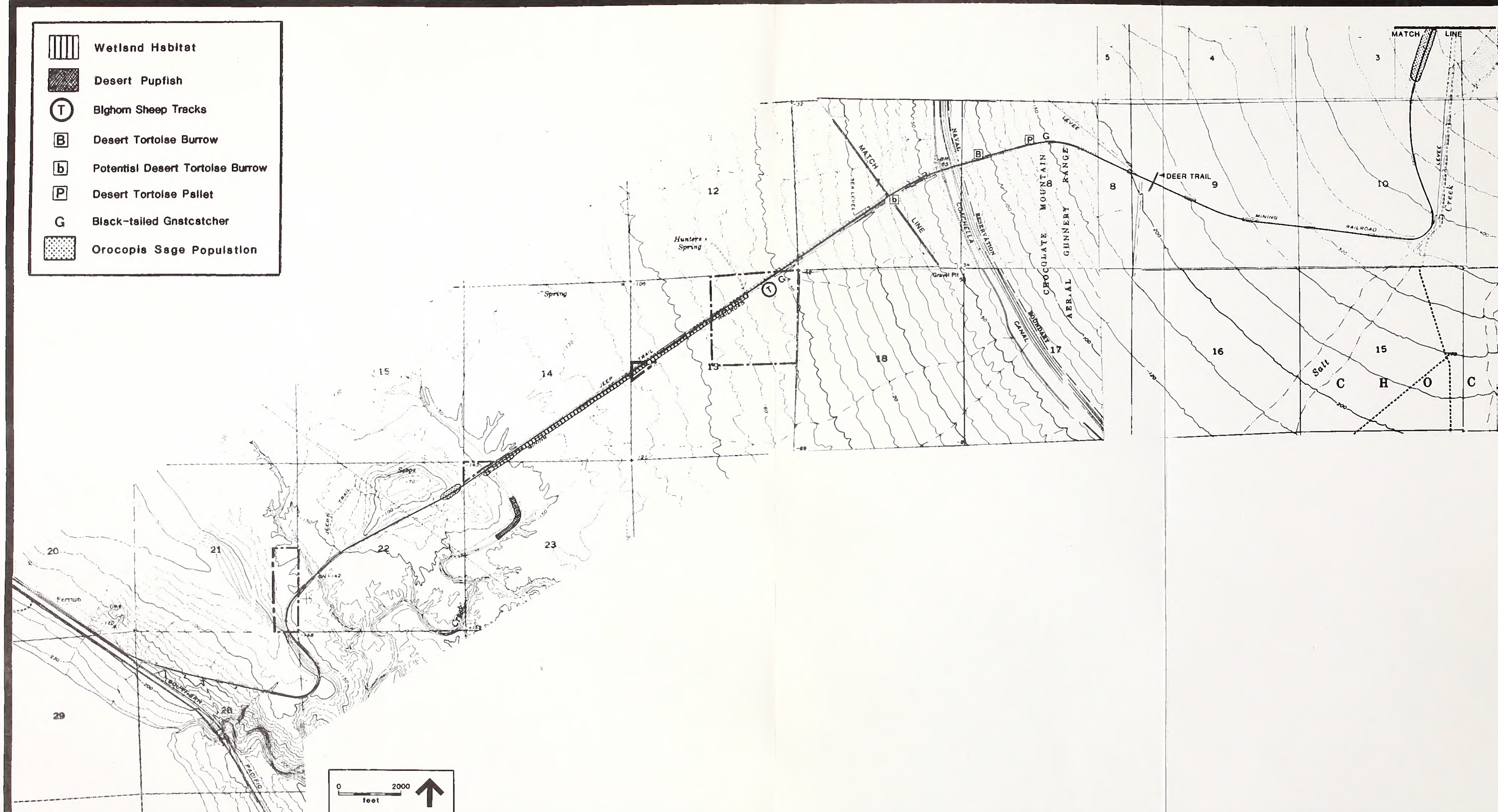

FIGURE 62a. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 1 OF 5

RECON

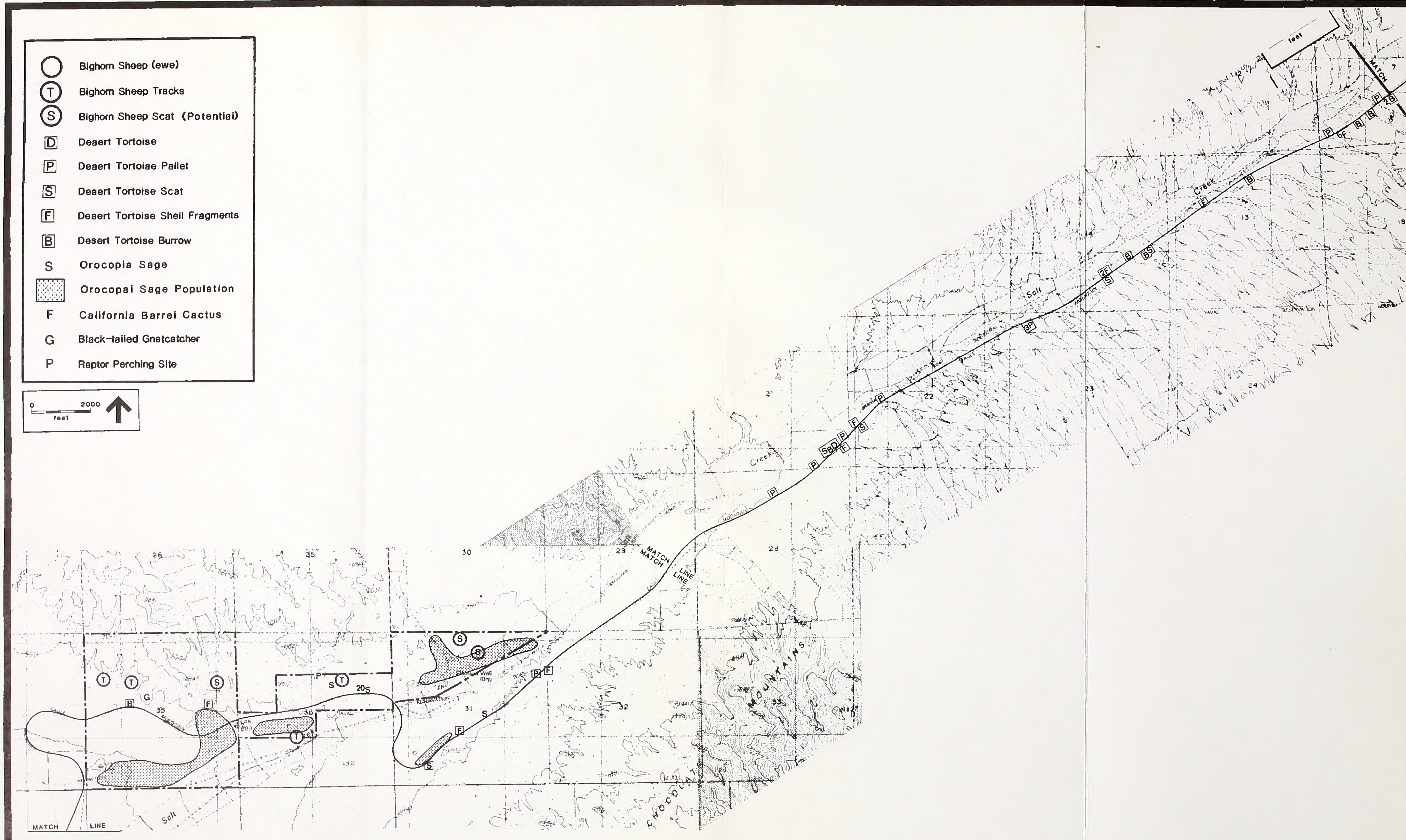

FIGURE 62b. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 2 OF 5

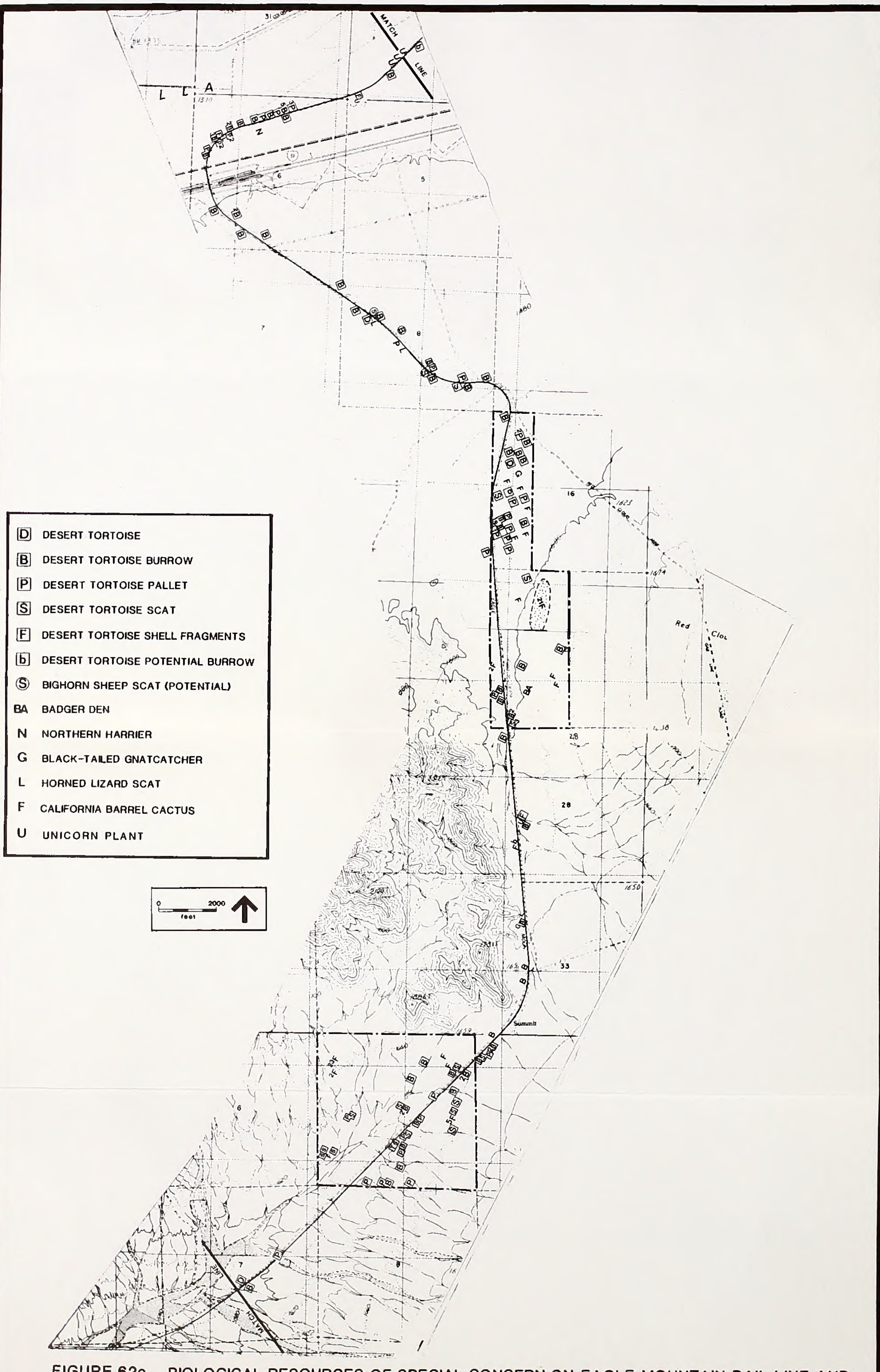

FIGURE 62c. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 3 OF 5

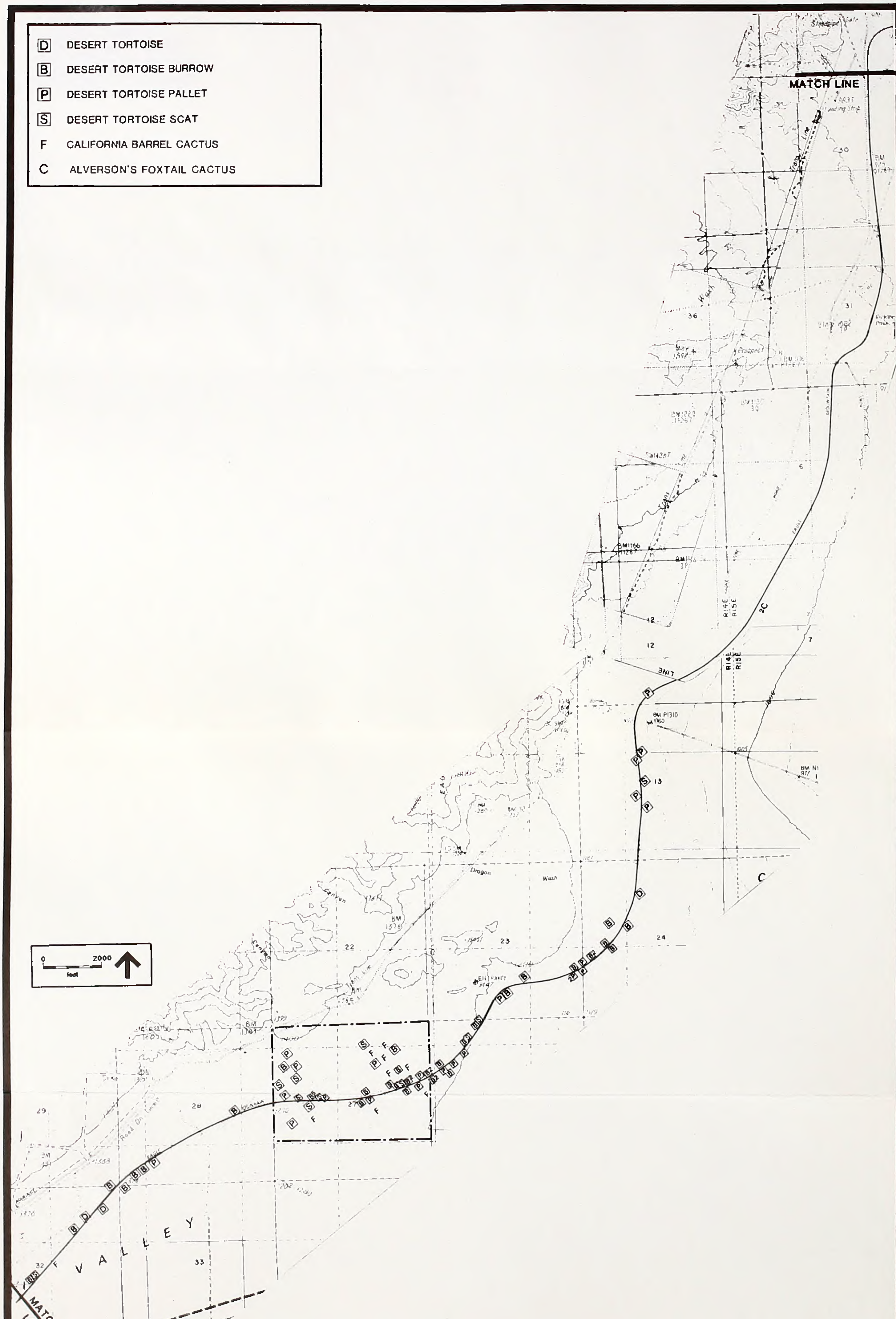

FIGURE 62d. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 4 OF 5

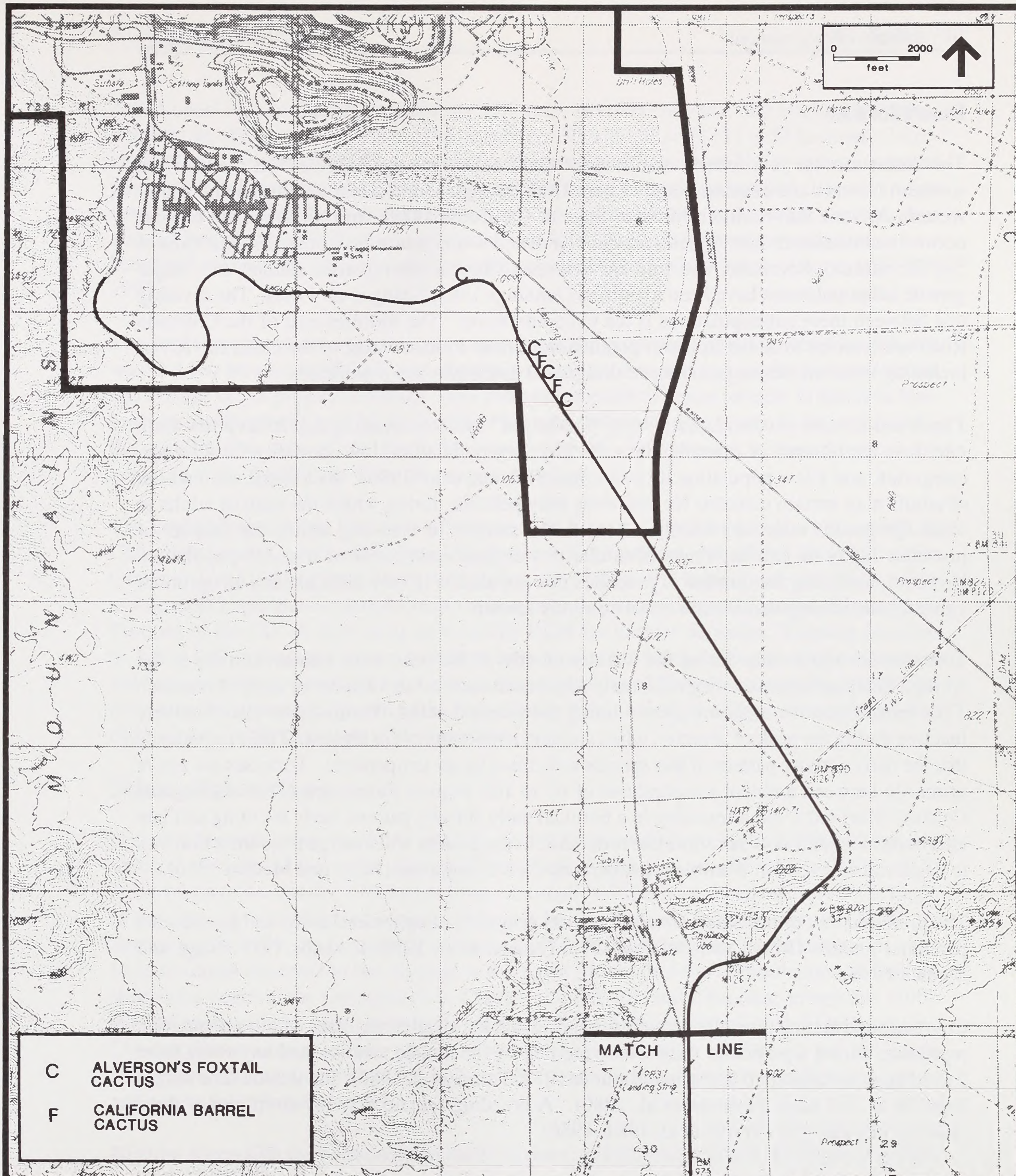

FIGURE 62e. BIOLOGICAL RESOURCES OF SPECIAL CONCERN ON EAGLE MOUNTAIN RAIL LINE AND KAISER PROPERTIES, MAP 5 OF 5

RECON

Desert Tortoise

The desert tortoise is a federal and State of California threatened species. It ranges from southern Nevada and extreme southwestern Utah through southeastern California and south-western Arizona into northern Mexico (State of California 1989). In California, the tortoise occurs in northeastern Los Angeles, eastern Kern and southeastern Inyo counties, and most of San Bernardino, Riverside, and Imperial counties. Based upon genetic studies, two major genetic subpopulations have been identified (Jennings 1985; Spang et al. 1988). The dividing line between these subpopulations is the Colorado River. The tortoises east of the Colorado River are referred to as the Sonoran population. Those tortoises west of the Colorado River, including those on the project site, are designated as the Mojave population.

The desert tortoise is considered to be a "K-selected" species, meaning that it has a low birth rate, low recruitment of juveniles into the breeding population, low mortality in older age categories, and a low population turnover rate (Hohman et al. 1980). As a result, the number of adults may remain constant for relatively long periods, during which the ratio of adults to other age groups may vary widely. Next to the number of breeding adults, the number of juveniles likely to join the ranks of adults is a critical component of a stable population. However, assessing the number of juveniles in a population is very difficult, and an optimum value for the adult/juvenile ratio is not currently known.

Tortoises are active only during the warmer months of the year, with greatest activity in the spring. Their active season begins in early March and ends in late October or early November. They remain inactive in their burrows during the winter months. Tortoises are also relatively inactive during the peak of summer, when ambient temperatures are highest. There is evidence that the daily activity pattern of this species is dictated by air temperature. Tortoises are active primarily between ambient temperatures of 65 to 105 degrees Fahrenheit (18 to 42 degrees Celsius) (Karl n.d.), often resulting in a bimodal daily activity pattern, early morning and late afternoon. Rainfall also can stimulate tortoise activity, as they will emerge from their burrows to drink rainwater, even if ambient temperatures are not optimal (Nagy and Medica 1986).

The preferred diet of the desert tortoise consists primarily of ephemeral forbs and grasses and perennial grasses (Burge and Bradley 1976; Hansen et al. 1976; Coombs 1979; Nagy and Medica 1986).

Courtship and mating typically occur in the spring, but not all adult tortoises within a population reproduce during a particular year. Nests are dug by the female tortoise, and anywhere from 2 to 14 eggs are deposited (Ernst and Barbour 1972; Turner et al. 1986). Incubation time ranges from 98 to 135 days (Hohman et al. 1980). A breeding female may lay from one to three clutches in a summer (Turner et al. 1984, 1986).

Based upon data for desert tortoises in California, Arizona, Nevada, and Utah, the average home range of a tortoise is estimated to be between 27 and 131 acres (11 to 53 hectares) (Berry et al. 1986). Females typically have smaller home ranges than males. Long-term movement patterns for individual tortoises and whole populations are not well understood. It is not known how far an individual tortoise travels over the course of its lifetime and in what patterns. It is also not known which individuals and groups are likely to migrate to other habitat areas, how long such movements take, and what conditions prompt or prohibit such movement (RECON 1990).

The small amount of desert tortoise sign found near the proposed Eagle Mountain landfill site was in a flat area south of the Eagle Mountain townsite on a parcel of public (selected) lands and outside of the project boundary. Any potential impacts to desert tortoise in this area from townsite development will be dealt with in the environmental documents to be prepared for the specific plan area of the Eagle Mountain townsite. No impacts to desert tortoise are expected at the landfill site from the proposed project.

The Eagle Mountain rail line right-of-way and the Kaiser-offered lands fall within the BLM California Desert Conservation Area, and portions of the railroad and offered lands fall within Category 1 and 3 designated desert tortoise habitat. Category 1 habitat areas are those which are the most important for desert tortoise management consideration and Category 3 is the least. Portions of the CDCA have been surveyed by BLM for tortoise densities. Tortoise densities of 100 to 250 animals per square mile have been reported in habitat along the Eagle Mountain rail line just south of Interstate 10. Lower tortoise densities of 20 to 50 animals per square mile have been documented adjacent to the high-density habitat along the Eagle Mountain rail line right-of-way north and south of the interstate.

Nelson's Bighorn Sheep

Nelson's bighorn sheep is a State of California fully protected species and a BLM sensitive species. Results of an aerial survey of the Eagle Mountains conducted by CDFG (U.S. Department of the Interior 1986) showed approximately 50 bighorn sheep residing in the Eagle Mountains. A second aerial survey conducted by the National Park Service and BLM, on September 24, 1990, confirmed that approximately 50 sheep inhabit the Eagle Mountains, with 19 individuals observed in the vicinity of the Eagle Mountain Mine. Populations of bighorn sheep also occur in the Orocopia (50), Chuckwalla (35-40), and Chocolate mountains (100). Habitat management plans have been developed for bighorn sheep in the Orocopia and Chuckwalla mountain ranges, and a habitat management plan is planned for the Eagle Mountains. Potential corridors for bighorn sheep movement occur between foraging ranges and across the railroad corridor.

Bighorn sheep sign were observed on roads, ravines, and ridgetops within the Eagle Mountain landfill site (see Figure 60a). One potential bedding area was observed in the northeast portion

of the site. Bighorn sheep have become somewhat habituated to mining operations. Local residents regularly observe up to 20 sheep drinking from the leaky water tank west of the Eagle Mountain townsite (Anderson, Kaiser Steel Resources, 1989). Although sheep may continue to use a disturbed area, the level of stress they endure, which could affect their susceptibility to disease or decreased reproductive success, is not known. Three permanent and one temporary water sources on the Eagle Mountain landfill site showed bighorn sheep sign along their edges. One bighorn sheep was observed within the railroad corridor. Probable bighorn sheep tracks were observed in the railroad corridor south of Interstate 10 as far south as the Coachella Canal and in the parcels owned by Kaiser Steel Resources to be offered to BLM in Salt Creek (see Figures 62a and 62b).

Bighorn sheep move between mountain ranges. Although the reasons for this intermountain movement are unknown, BLM has documented established movement corridors for sheep in the California desert area. A summary of intermountain movements by bighorn sheep (Schwartz, Bleich, and Holl 1986) and observations during sheep translocation programs indicate that bighorn sheep can travel long distances. Schwartz, Bleich, and Holl (1986) suggest that because of these movements, bighorn sheep may consist of metapopulations with a subpopulation occurring in each mountain range. Movement increases the potential for genetic variability within the metapopulation. These researchers further conclude that the subpopulations vary in number and genetic structure as habitat changes within a mountain range, creating a variable population structure through time.

Desert Pupfish

The Salt Creek tributary drainage that is crossed by the Eagle Mountain rail line approximately two and one-half miles upstream from the Salton Sea is desert pupfish habitat (NW1/4 Sec. 23, T. 8 S., R. 11 E.). The desert pupfish is a federal and state endangered species. A survey conducted by CDFG in 1986 found a population of 70 pupfish in the tributary of Salt Creek approximately one-quarter mile downstream of the Eagle Mountain rail line trestle, at the confluence of this tributary with the main drainage of Salt Creek. Results of that survey indicate that good pupfish habitat extends along the streambed from the railroad trestle to the confluence with Salt Creek and further downstream approximately one-half mile to where a power line crosses the creek. Some areas of this habitat, however, were too shallow to set traps.

Surveys conducted by CDFG in early June, 1990, found 125 pupfish in the same area of the tributary to Salt Creek; however, a flash flood reduced the pupfish population to two fish on June 16. Pupfish have also been observed in the BLM property at Rancho Dos Palmas, at the head of the tributary drainage discussed above, approximately two miles upstream from the railroad trestle. Surveys conducted in May and June, 1990, found no pupfish in an alkali pond within the railroad right-of-way east of the Salt Creek tributary. Habitat directly beneath the trestle and within the survey boundaries up- and downstream of the trestle appears appropriate for desert pupfish.

Bats

The California leaf-nosed bat and Townsend's big-eared bat were observed during directed surveys of the site (see Figure 60a). These species are California Species of Special Concern, with the leaf-nosed bat a Category 2 candidate species for listing by the U.S. Fish and Wildlife Service (USFWS). A diurnal roosting site for California leaf-nosed bats was found in the mine tunnel (adit) west of the East Pit. Pregnant female bats were captured in the night roosts, indicating that the diurnal roosting site may also be a maternity roost. Night roosts for this species were found in three additional sites. This species was found, during the November–December 1990 survey, to use the adit as a winter roosting site. This is the only known winter roost for this species in the Eagle Mountains, and 100-200 individuals were estimated to be present at the time of the survey (Brown 1990).

Sign of the Townsend's big-eared bat was also found in the adit. The bat droppings observed near the entrance to the adit were in a typical formation signifying evidence of a maternity roost (see Attachment 1 in Appendix F). However, the droppings were at least one year old and no individuals were observed during either survey.

Other Mammals

One American badger burrow was observed along the railroad right-of-way south of Interstate 10. Ringtail tracks were observed in the adit on the mine site. Ringtails are naturally scarce in the desert but are always found near water sources within their home range. Both these species are California Species of Special Concern and the ringtail is fully protected by the State of California.

Birds

Sensitive bird species observed were black-tailed gnatcatcher, LeConte's thrasher, yellow warbler, yellow-breasted chat, and northern harrier. These birds are California Species of Special Concern. Black-tailed gnatcatchers were found in most washes that had relatively dense native tree species in habitat along the railroad, Eagle Mountain Road, and in the Eagle Mountain landfill site. The yellow warbler and yellow-breasted chat were observed during the migration season in the Eagle Mountain townsite. One northern harrier was observed foraging north of Interstate 10.

c. Wildlife Species of Special Concern Potentially Occurring

Several sensitive wildlife species not observed during the surveys may use the habitats within the project boundaries and the Kaiser Steel Resources properties. Those species that are on federal or state threatened or endangered lists are discussed below.

The peregrine falcon is a federal and state listed endangered species. These birds are generally found along the coast where they frequent coastal estuaries and areas which concentrate migrant waterfowl and shorebirds upon which peregrines prey. Peregrines observed inland during migration or the winter are usually found at areas with water and they have been observed wintering in the regional area (i.e., the Colorado River). They do not nest in southern California deserts.

Swainson's hawk is a California threatened species and a federal Category 2 species for listing. The Swainson's hawk is observed occasionally in the desert during spring and fall migrations and may hunt over the project site during that time, but the hawk has not been documented as a breeder in the vicinity of the project site. Tall cottonwood or sycamore trees are Swainson's hawks' preferred nesting sites, and no tall trees occur within the project boundaries.

The golden eagle is a California fully protected species and a BLM sensitive species. It is also protected by the federal Bald Eagle Protection Act. BLM (1980) has identified three areas of potential foraging habitat near the vicinity of the project site. Golden eagles were not observed in the project area during the survey; however, potential perching and roosting sites were observed in undisturbed and disturbed habitat in the Eagle Mountain landfill site. No appropriate nesting habitat was observed on the site. Potential foraging habitat was observed on the flatter portions of the mine project and in ravines and washes of the Eagle Mountains.

Yuma clapper rail is a federally endangered species and a California threatened species. Surveys conducted by the Bureau of Reclamation in 1988 (1989) revealed approximately eight Yuma clapper rails in March and six in April in the Salt Creek marsh area in the Dos Palmas Ranch (part of the Salt Creek ACEC). No clapper rails were observed during this survey within 100 feet of the railroad bed and no clapper rails are expected to occur along the railroad corridor because no appropriate habitat exists.

California black rail is a California threatened species and a Category 1 candidate for federal listing. A recent survey reported black rails in the Salt Creek tributary area west of the railroad and in similar habitat as the Yuma clapper rail (Bureau of Reclamation 1989). No rails were observed during the survey and no appropriate habitat occurs along the railroad corridor.

Eagle Mountain scrub jay (*Aphelocoma coerulescens cana*) is a subspecies of scrub jay only known to occur in the pinyon/juniper woodland habitat on the upper elevations of Eagle Mountain, in Joshua Tree National Monument (Peterson 1990). This bird is believed to have originated by hybridization between coastal and interior jay populations (Peterson 1990). The population is estimated at only 40-50 birds confined primarily to 150 acres of pinyon/juniper woodland near the peak of Eagle Mountain (Peterson 1990; Hays, pers. comm. 1991). This subspecies has been proposed by the USFWS as a Category 2 species. The status of this bird is likely to change as more information is collected. Eagle Mountain is located approximately

18 miles from the landfill site. No scrub jays were observed on the project site during any of the biological surveys.

d. Sensitive Plant Species

No listed state or federal plant species were observed within the bounds of the project, and none are expected to occur in the area. Several sensitive plant species which are candidates for federal listing or considered rare and endangered by the California Native Plant Society were observed at the landfill site and along the railroad right-of-way.

One federal Category 2 candidate species and one federal Category 3c species were observed within the project boundaries of the proposed Eagle Mountain landfill area: Alverson's foxtail cactus (*Coryphantha vivipara* var. *alversonii*) and California barrel cactus (*Ferocactus acanthodes* var. *acanthodes*), respectively. Alverson's foxtail cactus were observed frequently in areas of the existing Eagle Mountain Mine. Three large populations were found in the southwest portion of the mine along Eagle Creek, in the washes to the north of the mining road, and in the southeast portion of the mine from near the landing strip to north of Kaiser Road and west of Eagle Mountain Road (see Figure 60b). A large population of California barrel cactus occurs on the undisturbed slopes adjacent to the mine and in the tailing pond in the southeastern portion of the mine.

Two federal Category 2 candidate species and one federal Category 3c species were observed within the corridor of the railroad right-of-way: Alverson's foxtail cactus, Orocopia sage (*Salvia greatea*), and California barrel cactus, respectively. Unicorn-plant (*Proboscidea althaeifolia*) and crucifixion thorn (*Castela emoryi*), both listed as sensitive plants by the California Native Plant Society, were observed within the railroad corridor (see Figures 62a-62e).

A few plant species (e.g., California ditaxis, California snake-bush) occurring historically in the area of the Eagle Mountains have the potential for occurrence within the project area, but they were not observed within the study corridors during the surveys of the site. They are discussed in the biology technical report for the project (see Appendix F).

H. Growth Inducement and Socioeconomics

The affected environment from a growth inducement and socioeconomic standpoint includes Eagle Mountain and the nearby communities of Desert Center and Lake Tamarisk, which are located southeast of the project site. The Lake Tamarisk development consists of privately owned single-family homes, a mobile home park, two recreational lakes, and a golf course. Desert Center has 13 single-family residences and several highway-related businesses. Commercial services in the area are found primarily in Desert Center.

Little demographic and economic information is available for these communities in the Chuckwalla census tract. Since the mining operations have ceased, the 1980 census information is no longer valid. The population in Eagle Mountain is reduced substantially from the 1980 estimates. However, a 1989 census tract update by the Riverside County Planning Department and field visits to the area do provide information on the existing community conditions at Eagle Mountain, Lake Tamarisk, and Desert Center. Information from the 1990 census is not yet available (Archibeque, Riverside County Planning Department, 3/11/91). The estimated population for the larger subregion is approximately 400. This larger area would include persons living along Rice Road to the north and at the Metropolitan Water District Eagle Mountain Pumping Plant.

1. Growth Inducement

a. Eagle Mountain

The town of Eagle Mountain has changed significantly since the Kaiser mine closed in 1982. In 1978 there were 3,700 persons living at Eagle Mountain, 416 permanent residences, 185 trailers, 450 dormitory rooms, and supporting commercial facilities (Kaiser Steel Corporation 1978:6). As late as 1980, census data indicated that there were 579 dwelling units and a population of 1,859 at Eagle Mountain. While the infrastructure is still in place to support a larger population, the town of Eagle Mountain now supports only the Kaiser office facilities and the return-to-custody facility for parole violators. The RTCF has been operating in Eagle Mountain since 1986 under a lease from Kaiser Steel Resources and a County Public Use Permit. The facility presently houses 271 inmates; a maximum of 500 inmates is allowed.

Eagle Mountain presently has a population of 174, housed in 60 dwelling units. These units are currently occupied by Kaiser employees or rented by Kaiser to others (e.g., employees of the RTCF or individuals). Kaiser Steel Resources owns all of the housing units in Eagle Mountain. As noted previously, the community contained 1,859 people in 1980 which were housed in 579 dwelling units. Consequently, over 400 vacant dwelling units currently exist at Eagle Mountain. Supporting commercial and institutional uses (post office, laundromat,

pharmacy, bowling alley, store and cafe, bank, medical and dental offices, and two churches) are no longer operating.

The only ongoing uses at Eagle Mountain include the Kaiser Steel Resources management office, the RTCF, and the high school which is being used for grades K-8 (approximately 90 students). A trailer park is planned by Kaiser Steel Resources for Eagle Mountain to provide rental recreational vehicle trailer spaces (Stokes, Kaiser Steel Resources, 3/1/91). Any resource production uses since the mine closure have been limited to sporadic shipments of previously stockpiled pelletized iron concentrates and rock products such as riprap, road base, and decorative crushed rock, amounting to about 10,000 tons per year. Processing of the 10,000 tpy of crushed rock is performed by existing Kaiser personnel. The value of this activity is approximately $6,500 per year. Dismantling and removal of the ore processing equipment is in progress.

b. Lake Tamarisk

The community of Lake Tamarisk was originally developed in the 1960s by Kaiser Steel Corporation as a housing and recreation area for its management employees. The development consists of about 70 privately owned single-family homes, two recreational lakes, a nine-hole golf course, a 150-space recreational vehicle trailer park, and about 150 undeveloped lots owned by Kaiser Steel Resources. Approximately 65 single-family homes are currently occupied in Lake Tamarisk. Approximately 50 persons stay at Lake Tamarisk on a seasonal basis (Stokes, Kaiser Steel Resources, 6/30/89). Lake Tamarisk also has a senior center, recreation center, County fire station, County branch library, churches, and a pro shop associated with the golf course. The population of Lake Tamarisk changed little with the closure of the mine in 1982.

c. Desert Center

The area's commercial services are found primarily in Desert Center, at the junction of Interstate 10 and State Route 177. The community of Desert Center has an estimated 1989 population of 27, housed in 13 dwelling units. All of the single-family residences are currently occupied. A post office, two gas stations, three mini-markets, a cafe, a drive-in, and a bar provide services to the traveling public and residents of the area, including Eagle Mountain. There are also two trailer parks in the area containing 150 spaces (approximately 10 are currently occupied). Prior to the mine closure in 1982, the trailer parks were full. Most of the resident population is employed in the highway services businesses.

2. Socioeconomics

a. Local

County Services Area (CSA) 51 consists of the community of Desert Center made up of 70 homes, 150-space recreational vehicle park, and 100 developed lots along a one-mile length of Kaiser Road, two miles north of Desert Center. It also includes the communities of Lake Tamarisk and Eagle Mountain. CSA 51 provides water, sewer, and trash disposal for the community along Kaiser Road and Desert Center. Table 13 reflects the CSA 51 budgets for the years 1977–1980 when Kaiser Steel Corporation was still very active and the years 1988–1989 when the mine had ceased most of its operations. The 1978 budget is very close to the 1988 budget. Ten years of inflation alone would have doubled the budget of 1978. Therefore, the current budget reflects only a minimal caretaker budget.

The town of Eagle Mountain had a population of approximately 3,700 persons requiring all of the services discussed below. In 1979 Proposition 13 caused the service area to lose its tax base, and hence, revenues decreased. Prior to Proposition 13, the bulk of the budget stemmed from property taxes within the area, that is, the plant facilities and homes. From 1968–1978 Kaiser Steel Corporation made an annual $60,000 cash contribution to the County for CSA 51 over and above any property taxes. Kaiser discontinued this practice in 1979, which is reflected in the drop in revenue in the table below. From that point on, the largest single item in the revenues to the CSA 51 is an appropriation from the board of supervisors out of the County budget.

TABLE 13
COUNTY SERVICES AREA 51
1977–1980 AND 1988–1990 BUDGET

Year	Revenue	Expenditures
'77–'78	$366,368.00	$366,368.00
'78–'79	336,227.00	336,227.00
'79–'80	277,115.00	277,115.00
'88–'89	357,018.00	$353,644.00
'89–'90	358,620.00	—

b. Regional

The proposed landfill intends to service Los Angeles, San Bernardino, Riverside, and Orange counties. Therefore, these counties may be considered the region most likely to be impacted economically by the project. The San Gabriel Valley has been the disposal site for almost 50

percent of Los Angeles County's solid waste. With declining landfill capacities and strong opposition to trash incineration, the cities of the San Gabriel Valley began serious consideration of a wide range of alternative waste disposal options, particularly rail haul of waste to outlying counties, recycling, and composting (SCAG 1988:1-2). In April, 1988, SCAG published "The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites." Because the San Gabriel Valley is so typical of the area potentially served by the proposed project, the results of that report are used in the regional economic impact analysis in this draft EIS/EIR. Copies of this report may be obtained from SCAG or reviewed at the Desert Center library.

I. Geology and Mineral Resources

The following discussion is based on research done by SCS Engineers, Inc.

1. Soil and Geologic Conditions

a. Rock Sequence

The Eagle Mountains and other upland areas are composed primarily of Paleozoic metasedimentary and Mesozoic granitic rocks (Dubois and Brummett 1968; Collins 1982). Figure 63 shows the geology of Eagle Mountain Mine. These rocks also outcrop in outliers of the mountains which extend into the valley. Cenozoic alluvial sediments form the bulk of the fill in the Chuckwalla Valley. Minor deposits of alluvium fill the bottoms of the larger stream channels within the mountains. In addition to the alluvial deposits, lake bed and windblown sand (dune) deposits are also found in the valleys. The rocks and sediments present in the area are described below in order of age, starting with the oldest.

The oldest rocks in the area are gneiss and schist of assumed Precambrian age. Limited exposures are found in the mine area, although larger areas are present in the southern Eagle Mountains. The gneiss is banded and is composed of quartz, orthoclase, and biotite. Biotite schist composed of layers of biotite alternating with quartz/feldspar layers is also present. In places, the biotite and feldspar content is so low that the rock grades into a quartzite. The exposures of these rocks in the mine area are only along the main haul road southeast of the Black Eagle Pit. In this area, the gneiss is unconformably overlain by the lower quartzite unit (see below) and has discordant contact with the quartz monzonite.

A sequence of metamorphosed sedimentary rocks of probable Paleozoic age is the next youngest in the area. As determined by surface mapping and interpretation of drill hole data, the Paleozoic rock sequence is as follows, from oldest to youngest: lower quartzite, schistose meta-arkose, lower marble, middle quartzite, upper marble, and upper quartzite. The thickness of these units when combined ranges from a minimum of 1,200 feet to greater than 2,200 feet. Much of the lower and upper marble units have been replaced by calc-silicate rock (tremolite-actinolite) and the iron ore body. This series of rocks is well exposed in the East Pit.

The largest part of the Eagle Mountains is composed of granitic rocks of probable Cretaceous age. The most common rock type is a porphyritic quartz monzonite that occurs as sill-like bodies in the Eagle Mountain Mine area. Small bodies of granodiorite and quartz diorite also occur in the Eagle Mountains.

The quartz monzonite is predominantly medium-grained and usually contains phenocrysts of potassium feldspar up to several inches across. The color of the rock ranges from light to dark

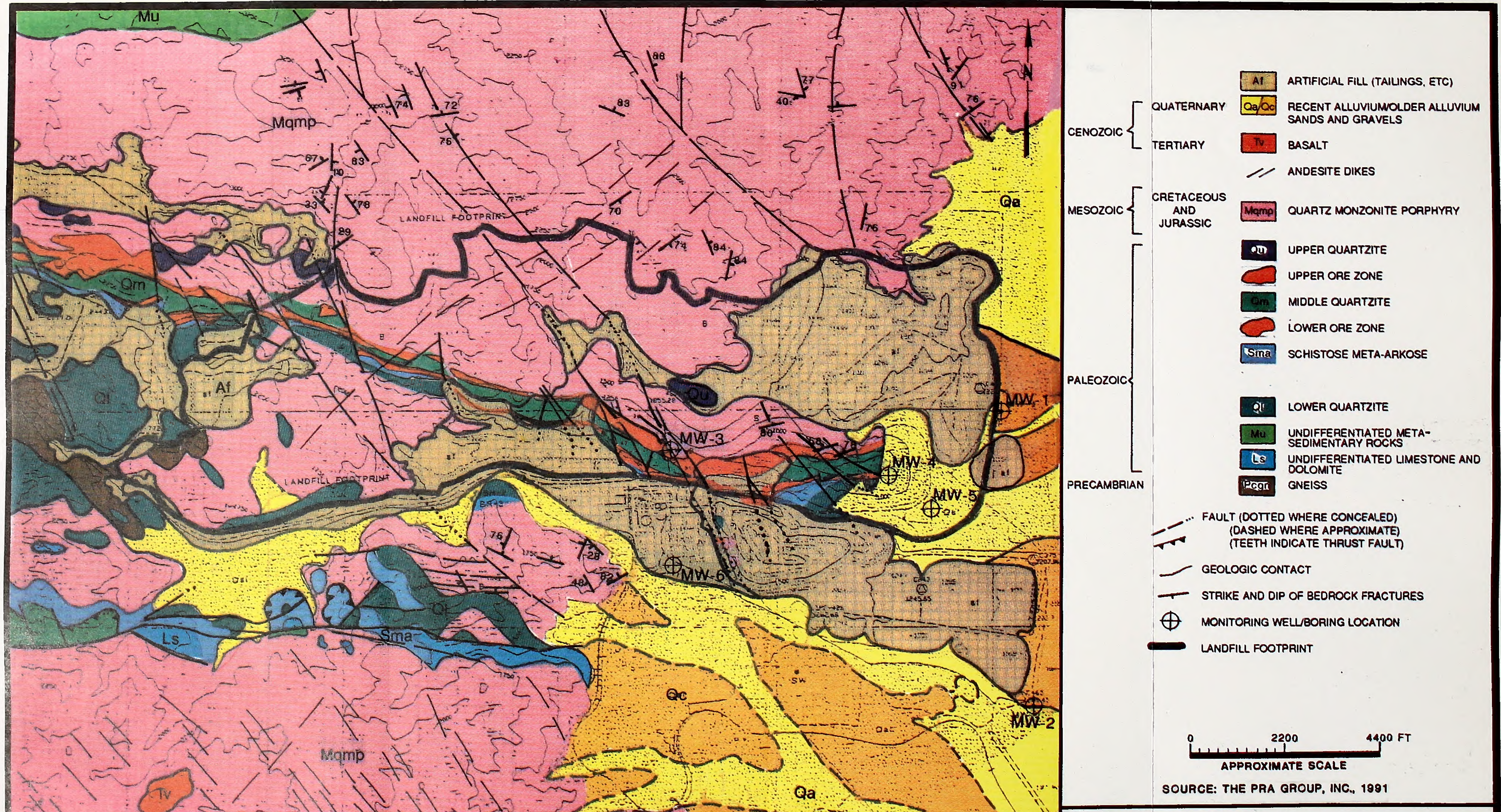

FIGURE 63.

GEOLOGY OF EAGLE MOUNTAIN MINE AREA

gray to green, depending upon the percentage of mafic minerals and the degree of alteration. The rock is composed primarily of subequal proportions of quartz, potassium feldspar, and plagioclase. Mafic minerals which may comprise up to 20 percent of the rock are primarily augite, hornblende, and biotite. In many areas, the rock has been affected by greenschist grade alteration that may have occurred at the same time as the ore- forming process. The alteration consists of the replacement of mafic minerals by epidote and chlorite, and feldspars by epidote, sericite, and clay minerals. The alteration may be intense in places, particularly adjacent to ore bodies and near fractures.

The area is cut by numerous andesite and andesite porphyry dikes that postdate the porphyritic quartz monzonite and other granitic rocks. The dikes also postdate the major period of folding. Most of the dikes are oriented in a northwest direction. The dikes are visible in the walls of the East Pit. Aplite dikes are also present in the area, although they are not as numerous as the andesite dikes.

Scattered outcrops of Tertiary volcanic rocks are found throughout the area. The rocks are primarily lava flows of basaltic composition. In the Eagle Mountains, several small bodies of volcanic rock are located south of the Eagle Mountain Mine. The most prominent occurrences of volcanic rock are at the gap separating the Pinto Basin and the Chuckwalla Valley and in the vicinity of the Eagle Mountain pumping station about four miles south of the mine.

Tertiary and Quaternary sediments fill the valley between the Eagle and Coxcomb mountains to depths of greater than 1,000 feet in the center of the valley. The sediments are predominantly sand and gravel alluvial fan deposits derived from the surrounding mountains, but sediments derived from an exotic source are also present. In addition to alluvial fan deposits, lake bed and sand dune deposits are found, but in much smaller volumes. Based on extensive drilling in the area east of the East Pit (Kaiser's Desert Eagle claim), the sediments have been divided into three major units, which are discussed in the sections below.

Lower Unit

A section of sand and gravel between 20 and 50 feet thick overlies the bedrock at least in the area to the east of the East Pit. This material is made up of sediment derived from the adjacent mountains. This is based on the presence of distinctive rock types, specifically the iron ore and associated calc-silicate granofels.

Middle Unit

This unit has been described differently depending on the source referenced. According to Dubois and Brummett (1968), this unit is up to 1,200 feet thick in places and is composed of silts and fine to coarse sands. This material has an overall quartz-rich composition and uniform

particle size. This section shows a lack of material with a recognizable source in the surrounding mountains, suggesting it was derived from somewhere else and transported.

A drill log and description of borehole "U" from the Desert Eagle prospect (approximately two miles east of the East Pit) describes this zone as Tertiary sediments. These sediments are described as consisting of layers of clay, shale, silt, gypsum, and sand. No lower unit is differentiated on the log. Three high-porosity zones, at 612 to 628, 635 to 641, and 1,080 to 1,160 feet, are distinguished.

Upper Unit

The upper unit is up to several hundred feet thick and is similar to the lower unit. It is composed of sand and gravel which, like the lower unit, contains clasts of iron ore. These deposits are unconsolidated to semiconsolidated and include the major water-bearing zone within the Chuckwalla Valley. The details of the hydrogeologic and water quality properties of this unit are discussed in more detail in Section III.A., Water Quality.

b. Soils

Small windblown sand dune deposits are found in the Chuckwalla Valley in the eastern portion near the Coxcomb Mountains. Similar deposits may also exist in the subsurface.

Artificial fill deposits have been created as a result of mining activities at the site. They consist of coarse waste rock (overburden) and coarse and fine tailing derived from ore processing activities. The waste rock dumps are mainly on the north side of the East Pit and consist of material up to approximately five feet across. The coarse tailing are mostly in the less than three-quarter- inch range and make up a large pile south of the East Pit and two smaller piles within the pit. The fine tailing consist of silt and clay size material that was deposited as a slurry in ponds to the south and southeast of the East Pit. Other areas of artificial fill underlie the area of the mine processing facilities and roadbeds.

c. Structures

Folding

The metasedimentary sequence has been folded into a large east/west-trending anticline that extends completely across the Eagle Mountains. All of the major iron ore bodies are found on the north limb of the anticline; however, some small isolated areas of mineralization are found along the axis of the anticline where it is exposed at the surface. The rocks in the mine area on the north limb of the fold strike approximately north 80 degrees west and dip generally 45 degrees north. Drilling has shown that the dip increases with depth. Numerous small-scale monoclinal folds are found throughout the area.

The massive nature of the quartz monzonite makes it difficult to observe folding within this body except where it is in contact with the metasedimentary rocks. The sill-like nature of these intrusions makes the structure more apparent in these areas. Structural mapping and borehole data compiled by Kaiser geologists and outside consultants (Dubois and Brummett 1968) show that the quartz monzonite has a similar structure to the metasedimentary rocks. Either the quartz monzonite was intruded along the preexisting fold pattern or was folded at the same time as the older rocks. It is most likely that the folding occurred at the time of intrusion (probably Cretaceous) of the quartz monzonite while it was in a liquid or semiliquid state.

Faults

Most of the faults in the Eagle Mountain Mine area have a northwest strike, although east-west and northeast-trending faults have also been observed. Most of the faults have near vertical dips with displacements ranging from a few to several hundred feet. Both normal and reverse movement have been observed (Dubois and Brummett 1968). The only fault observed during reconnaissance of the presently exposed rocks of the East Pit has a northwest strike and a near vertical dip (Figure 64). The fault was not a single break, but rather a zone of highly fractured rocks approximately 20 feet wide. The direction of displacement is not clear. The fault is old enough that it does not offset the Quaternary alluvium on the south side of the pit. The most recent movement on this fault is thus sometime prior to deposition of the alluvium.

Joints/Fractures

Rocks in the Eagle Mountain Mine area show a well-developed joint pattern. In the East Pit, two prominent joint sets were observed. One set strikes approximately north 35 degrees west and dips between 60 degrees southwest and 80 degrees northeast. The other site has a strike direction that varies from north 60 degrees west to north 70 degrees east and a dip of between 45 and 75 degrees north. This latter set forms prominent surfaces on the south side of the pit that dip into the pit and have acted as slope failure surfaces in the past. The joints are most prominent in the quartz monzonite and quartzite units. Other workers have concluded that fracture orientation varies between different areas within the mine and between different rock types.

The orientation and distribution of joints is important to this study, because if interconnected, they may form a pathway for groundwater movement.

Photolineaments and Faulting

Eight photolineaments extend through the site (Schaefer Dixon Associates 1989). Six of the photolineaments are fairly well expressed by an apparent alignment of topographic low points or "saddles" along the base of the northwesterly trending hills, tributary drainages within these hills, and tonal changes within the alluvial portions east of the project area. The origin of these

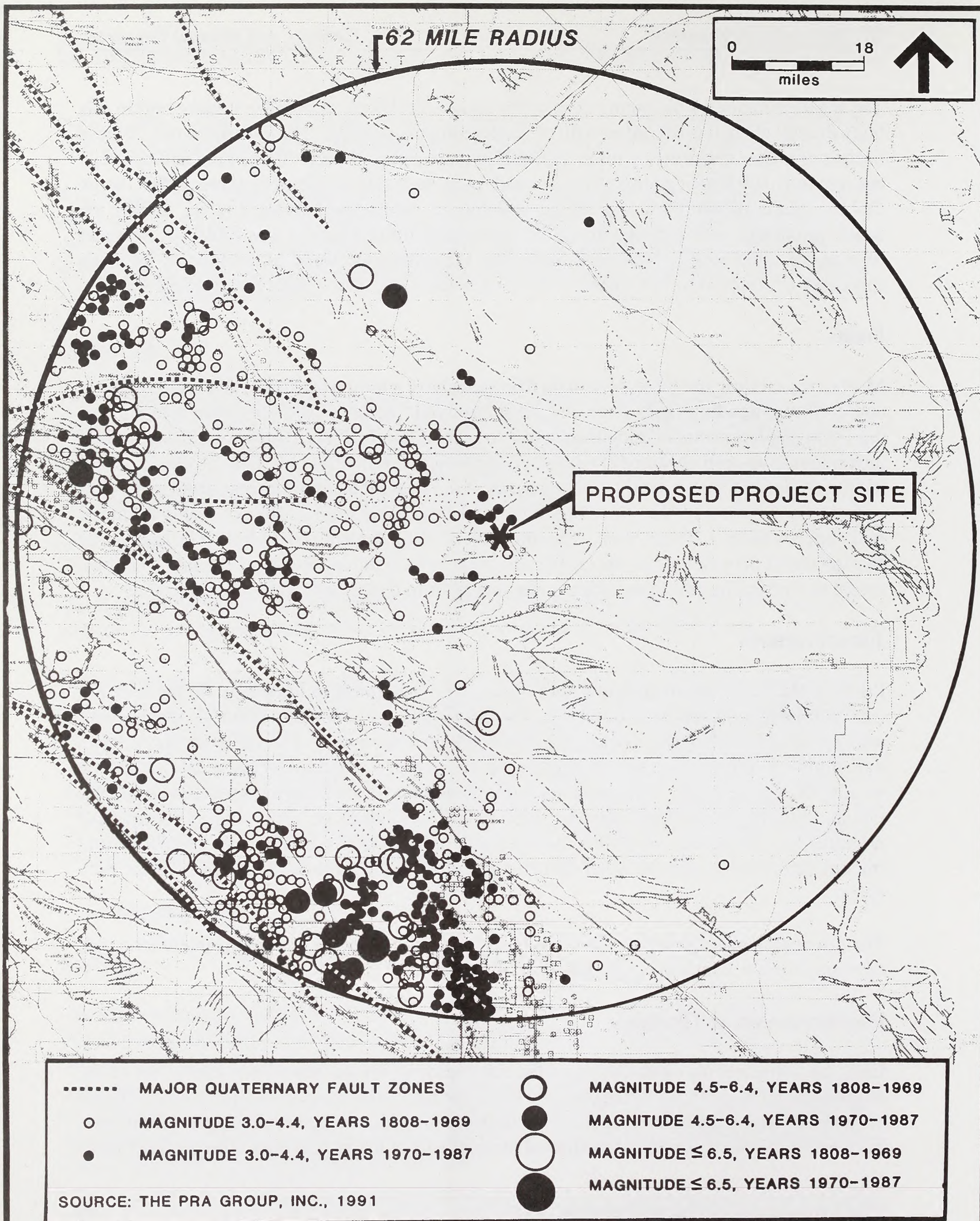

FIGURE 64. ACTIVE FAULTS AND SEISMICITY MAP (62 MILE RADIUS)

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photolineaments is unknown at present but may represent areas of deep weathering along bedrock fractures, differential weathering between adjacent rock units, or faulting. Two photolineaments strike in a northeasterly direction and appear to be resistant bedrock outcrops related to dikes or sills.

Numerous northwesterly striking, steeply dipping faults cut the project area; both normal and reverse movements have been noted (Collins 1982). How recent the activity of these faults is has not been evaluated or documented in the literature.

The nearest known active faults are the Pinto Mountain fault and the Bullion Mountain fault, approximately 25 and 28 miles to the northwest, respectively. The Blue Cut fault, at a distance of 21 miles, is the closest potentially active fault within the project vicinity.

The East Pit has been excavated into bedrock in the western part and alluvium in the eastern part. The contact between bedrock and alluvium is unconformable and dips approximately 30 degrees to the east as exposed in the walls of the pit. A ridge of bedrock that has been partly excavated runs north-south in the eastern part of the pit.

2. General Site Seismicity

Earthquakes that may occur on the Pinto Mountain, Bullion Mountain, Blue Cut, and southern San Andreas faults are capable of generating very strong ground shaking at the project site. Such potential for ground shaking is common within the highly seismic southern California region, as well as the project area. Figure 64 presents a compilation of the known active or potentially active faults within a 62-mile (100-km) radius of the project site and shows the historic seismicity from 1900 to 1988 for earthquakes with magnitudes greater than 4.0.

The Blue Cut fault, 21 miles to the west, is the active fault zone closest to the project area, while the Coyote Creek branch of the San Jacinto fault is the farthest, 62 miles to the southwest. Maximum earthquake magnitudes for the active fault zones near the project area range from 6.2 for the Ludlow fault (44 miles to the northwest of the site) to 7.5 for the San Andreas fault (34 miles to the southwest). Maximum earthquake magnitudes for the Blue Cut and the San Jacinto faults (Coyote Creek branch) are 6.8 and 6.6, respectively.

3. Mineral Resources

The project area is the site of the largest iron mining/steel making operation west of the Mississippi River. Iron mining operation began in the early 1940s and continued until 1982, when a combination of environmental and economic conditions caused operations to cease. Most of the ore processing and refining facilities have been removed. Three large open pits (approximately one to two miles long) were excavated during Kaiser's operations at the Eagle

Mountain Mine. These are named the Black Eagle Pit (westernmost), Central Pit, and East Pit (formerly known as the North-South Pit). The East Pit, which is proposed for use for landfilling, is approximately two miles long in an east-west direction, 2,000 feet wide north to south, and 400 to 800 feet deep. Small-scale gold and base metal mining has been carried out in the Eagle Mountains, most of it before the iron mine was in operation. Some recovery of coarse tailing for aggregate from the spoils piles and surface recovery of riprap and decorative stone in portions of the Central and Black Eagle pits exists currently.

a. Iron Ore Resources

Data, found in Table 14, regarding geologic iron deposits at the Eagle Mountain Mine in January, 1983 (Kaiser Steel Resources 1990; SCS Engineering 1990) show that approximately 335 million tons of iron-bearing material grading from 34.7 to 48.5 percent iron exist in nine separate resource areas at the mine (Figure 65). In addition to net tonnages, Table 14 shows average iron content for each resource area and the anticipated iron unit recovery (calculated based on Kaiser's recovery factors at the time of mine closure).

Of the iron resources at Eagle Mountain, only approximately 170 million tons (1.05 percent of U.S. reserves) were considered to be economically recoverable at the time of the mine closure (Table 15).

Open pit reserves based on an average stripping ratio of 3:1 exist in six discrete areas at Eagle Mountain. Percentage figures for each area reflect the percentage of the total reserves (resources economically recoverable in 1983). These are as follows:

East Pit - Alluvial: Approximately 21 million metric tons (12.6 percent) of placer deposits which consist of discrete particles of high-grade iron ore in alluvial matrix (sand or gravel).

East Pit - Midsection: Approximately 4.8 million metric tons (2.8 percent) of lode deposit. A lode is defined as a mineral deposit in a consolidated rock.

East Pit - West Extension: Approximately 6.8 million metric tons (4.0 percent) of lode deposit.

Central Pit: Approximately 65 million metric tons (37.9 percent) of lode deposit.

Black Eagle - North: Approximately 35 million metric tons (20.5 percent) of lode deposit.

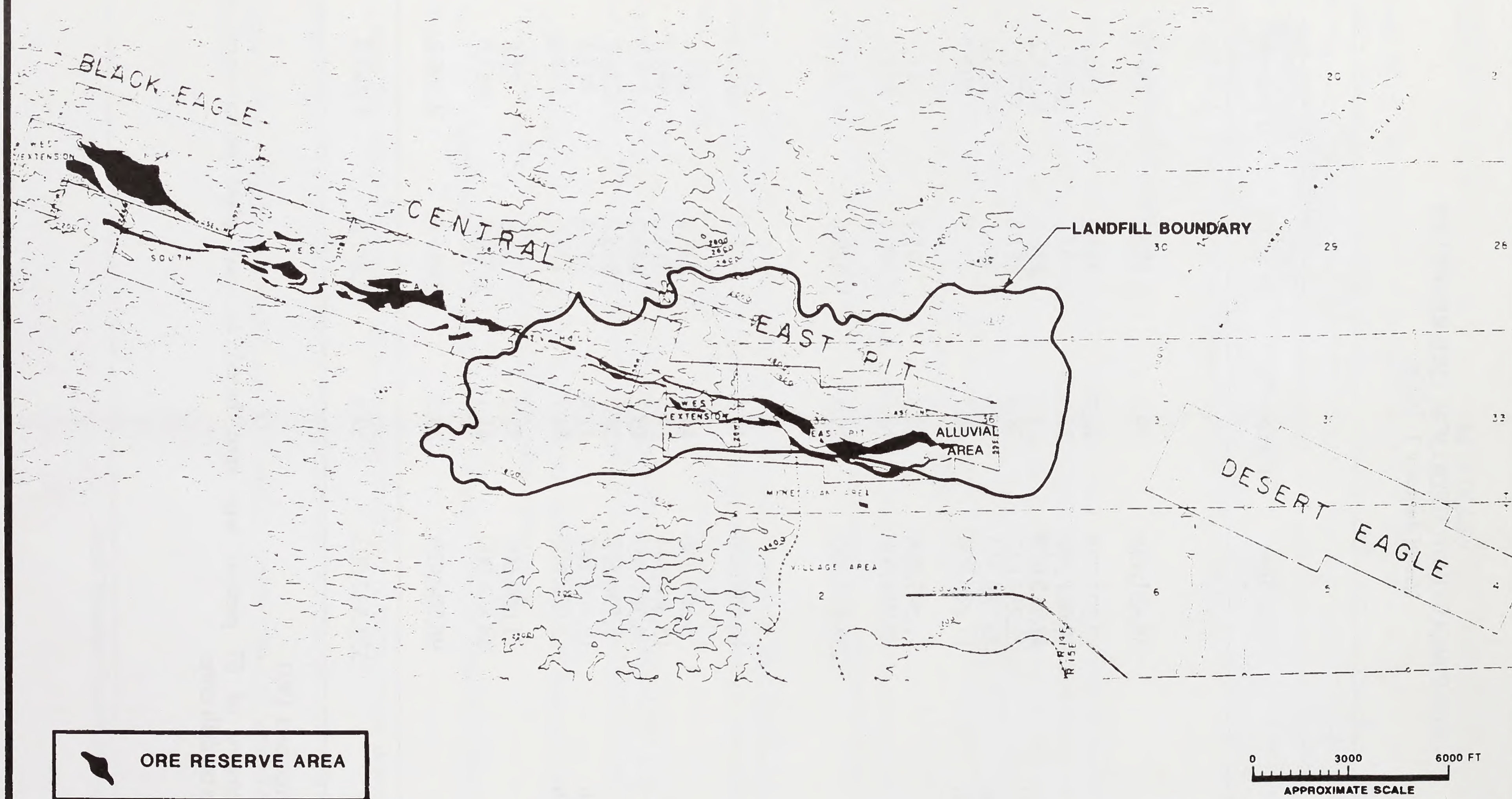
Black Eagle - South: Approximately 37.7 million metric tons (22.1 percent) of lode deposit.

TABLE 14
EAGLE MOUNTAIN GEOLOGIC ORE RESERVES
(As of January 1, 1983)

Resources	Metric Tons	Percent Fe	Million Units: Total Fe Units	Million Units: Recoverable Fe Units*
Measured				
East Pit	28,431,454	39.7	1,128.7	756.2
East Pit - West Extension	7,177,775	46.7	335.2	224.6
Central - TV Hill	48,061,239	37.3	1,792.7	1,201.1
Central - Main	42,265,029	37.3	1,576.5	1,056.2
Central - West	22,231,617	38.3	851.5	570.5
Black Eagle - North	49,785,843	39.6	1,971.5	1,320.9
Black Eagle - South	11,236,800	40.2	451.7	302.7
Black Eagle - West Extension	1,597,826	38.6	61.7	41.3
Desert Eagle	28,044,000	48.5	1,360.1	911.3
Subtotal	238,831,583	39.9	9,529.6	6,384.8
Indicated				
East Pit	10,639,420	42.4	451.1	302.2
East Pit - West Extension	5,503,346	44.3	243.8	163.3
Central - TV Hill	15,364,944	37.4	574.6	385.0
Central - Main	6,361,767	40.2	255.7	171.3
Central - West	8,536,628	38.5	328.7	220.2
Black Eagle - North	19,401,207	37.8	733.4	491.4
Black Eagle - South	5,058,600	34.7	175.5	117.6
Black Eagle - West Extension	1,009,008	38.2	38.5	25.8
Desert Eagle	24,826,000	41.1	1,020.3	683.6
Subtotal	96,700,920	39.5	3,821.6	2,560.5
TOTAL	335,532,503	39.8	13,351.2	8,945.3

SOURCE: SRS Engineers 1991

*An Fe unit recovery of 67 percent was used based on past plant performance and metallurgical tests on drill core.



SOURCE: THE PRA GROUP, INC., 1991

FIGURE 65. LOCATION OF ORE RESERVE AREAS

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TABLE 15
EAGLE MOUNTAIN MINE OPEN PIT RESERVES
REMAINING IN THE FINAL PIT DESIGN

Pit	Bene Plant Ore			Pellet Plant Ore								
	Metric Tons	% Fe	% S	Metric Tons	% Fe	% S	Metric Tons Total Ore	Total Fe Units	% of Total Fe Units	Metric Tons Waste	Metric Tons Total Material	S/R*
East Pit - Alluvial	21,133,604	24.7	0.05	279,169	40.3	0.40	21,412,773**	5,220,000	8.4	59,783,151	81,195,924	2.79
East Pit - Midsection	2,786,920	47.7	0.18	2,009,851	48.9	0.93	4,796,771	2,312,178	3.6	14,516,376	19,313,147	3.03
East Pit - West Extension	3,577,598	44.2	0.13	3,246,212	50.3	0.73	6,823,810	3,214,143	5.1	33,728,814	40,552,624	4.94
Central	18,882,600	37.7	0.40	45,762,907	37.7	1.38	64,645,507	24,371,356	38.5	139,981,215	204,626,722	2.17
Black Eagle - North	3,947,404	33.5	0.08	31,074,285	39.1	1.76	35,021,689	13,472,426	21.3	123,730,217	158,751,906	3.53
Black Eagle - South	27,896,125	38.8	0.13	9,855,076	38.3	0.82	37,751,201	14,598,191	23.1	172,136,309	209,887,510	4.56
TOTAL	78,224,251	35.0	0.17	92,227,500	38.9	1.41	170,451,751	63,188,294	100.0	543,875,982	714,327,733	3.19

SOURCE: SCS Engineers 1991

*S/R = Stripping ratio.
**Included in the total ore tonnage for the East Alluvial pit is state-owned ore.

Approximately 92 million metric tons of iron ore reserves at Eagle Mountain (or 54 percent of the total open pit reserves at the mine) are magnetite mixed with pyrite. These deposits have an average iron content of 38.9 percent and an average sulfur content of 1.41 percent (see Table 15). Production of marketable concentrates from such crude ore requires a fairly sophisticated flow scheme involving mineral jigs, heavy media separation, and magnetic concentration with pelletization.

Similarly, approximately 78 million metric tons of iron reserves at Eagle Mountain (or 46 percent of total open pit reserves at the mine) are mixtures of magnetite and hematite, with small amounts of pyrite. These deposits have an average iron content of 35.0 percent and a sulfur content of 0.17 percent. Production of marketable concentrates from this type of crude ore requires even more sophisticated flow schemes than for magnetite.

In most resource areas, iron ore exists in lode deposits which require sophisticated concentrators to produce saleable products. The only exception is the East Pit - Alluvial resource area, where 21.4 million metric tons of iron ore reserve is present in placer deposits. Although this resource area contains the lowest average iron content of any of the resource areas, the ease with which concentrates could be obtained from this placer material in a relatively unsophisticated concentrator, combined with the nearness of the resource area to the railhead and the relatively low mining costs experienced in this area, renders the East Pit - Alluvial resource area a likely site for future mining.

The ore crushing and concentrating facilities at the Eagle Mountain Mine have been dismantled for salvage, and the mining equipment has been sold. In addition, much of the infrastructure required to support the operation was completely abandoned in 1986 with the suspension of mining activities. Consequently, no concentrating can presently be performed at this mine.

Since 1948, approximately 100 million tons of high-grade iron ore concentrate has been shipped from the Eagle Mountain Mine. Initially, all mining was performed from replacement deposits in bedrock. More recently, an alluvial deposit of ore derived from erosion of the bedrock ore body was mined (eastern part of the East Pit).

b. Precious Metals

Following suspension of iron ore mining, the open pits and areas along strike, in the footwall, and in the hanging wall of the iron ore deposits were examined for precious metals by Kaiser, Pincock, Allen and Holt, Inc., Homestake Mining Company, Newmont Mining Corporation, the Goldfield Corporation, and Kiewit Mining Company. No precious metals were detected at any of the above locations (Kaiser Steel Resources 1990).

Two samples were collected by Kaiser from the discharge point of fine plant tailings into tailings basins 3 and 6. Fire assaying of these samples did not indicate the presence of gold (Appendix G).

In addition, coarse plant tailings were sampled and analyzed for precious metals. Twenty samples were collected from different locations on the coarse tailing stockpile T-6. These samples were first evaluated by fire assaying at Eagle Mountain. These analyses showed traces of gold in two samples (see Appendix G).

To confirm the above results, splits of the original 20 samples were sent to Skyline Labs, Inc., for gold and silver content analyses by atomic absorption. The results did not indicate the presence of gold in any samples; traces of silver were detected in six samples (see Appendix G).

Additional splits of the original 20 samples were sent to the Monitor Geochemical Laboratory. Analyses did not indicate the presence of gold in any of the samples; silver was detected in low (uneconomic) concentrations in three samples (see Appendix G).

c. Industrial Minerals

Some recovery of coarse tailing for aggregate from the spoils piles and surface recovery of riprap and decorative stone in portions of the Central and Black Eagle pits exists currently. These operations are estimated at a volume of approximately 10,000 tons per year and are regulated by County Ordinance No. 555, which implements the state Surface Mining and Reclamation Act (Public Resources Code, Section 2710 et seq.). This ordinance requires issuance of a permit and approval of a reclamation plan of mined areas. Such a permit has been approved by the County for the Kaiser operation.

Also, areas underlain by alluvial fan deposits in the southeastern portion of the land exchange area contain sand and gravel that may be of commercial grade (Morton 1991).

J. Visual, Recreation, and Wilderness Resources

1. Visual Resources

The visual assessment of the study area has utilized the BLM's Visual Resource Management System (BLM n.d.). Landscape character types were defined and scenic quality evaluated in the context of the regional landscape character. Key observation points (KOPs) and corridors were established and the visual sensitivity of the project area was determined based on the views from these points. A visual contrast rating was completed for the existing conditions of the project area.

a. Regional Landscape Character

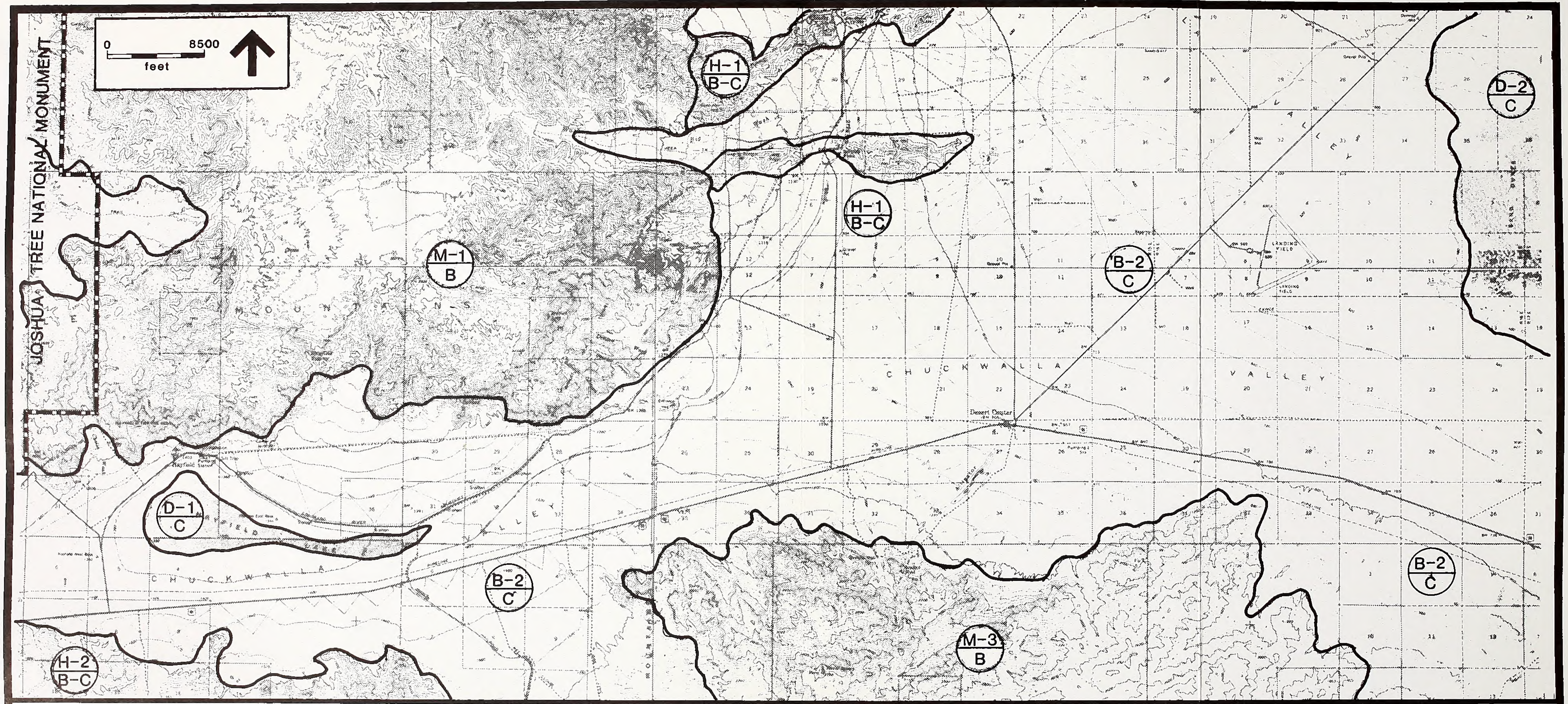
The project area is located within the Basin and Range province, which is characterized by extensively eroded mountain ranges separated by broad, relatively flat alluvial valleys. The Mojave and Sonoran deserts, both major North American deserts, lie within this province. North and west of the project area is the Mojave Desert, an upland high desert with stands of Joshua trees and elevations above 2,000 feet. South and east of the Mojave Desert there is a drop in elevation through the transition zone and down into the Colorado Desert, the most arid subdivision of the Sonoran Desert. Rainfall averages less than four inches per year. The elevation of the valley floors is under 1,500 feet. Pinto Basin, the Chuckwalla Valley, the Coxcomb and Chuckwalla mountains, and the Eagle Mountains, including the project area, are in the Colorado Desert.

b. General Scenic Interest

The scenic quality in the area consists primarily of sweeping panoramic views across the broad valley floors to the surrounding mountains. A strong contrast is created by the abutment of these two basic landforms. Added to this are daily changes in lighting, sun angles, shadow patterns, colors, and the dynamic skyscape: storms, cloud formations, sunrises, sunsets, and starry nights.

c. Landscape Character Types and Scenic Quality

Landscape character types within the study area include mountains, steep hills, basins and bajadas, dunes and dry lakes, and the mine area with its associated facilities. A brief description of the character and scenic quality of each type follows, and Figures 66 and 67 depict the landscape character and scenic quality.



Landscape Character Type — A-0 — Rating Unit

0 — Scenic Quality Rating

FIGURE 66. SCENIC QUALITY, SOUTHERN PORTION

LANDSCAPE CHARACTER TYPES AND UNITS			SCENIC QUALITY RATING	
Mountains	M.1	Eagle Mountains	B	Medium
	M.3	Chuckwalla Mountains	B	Medium
Steep Hills & Foothills	H.1	Eagle Mountain Foothills	B-C	Medium-Low
	H.2	Orocopia Mountain Foothills	B-C	Medium-Low
Basins & Bajadas	B.2	Chuckwalla Valley	C	Low
Dunes & Dry Lakes	D.1	Hayfield Dry Lake	C	Low
	D.2	Chuckwalla Valley Dunes	C	Low

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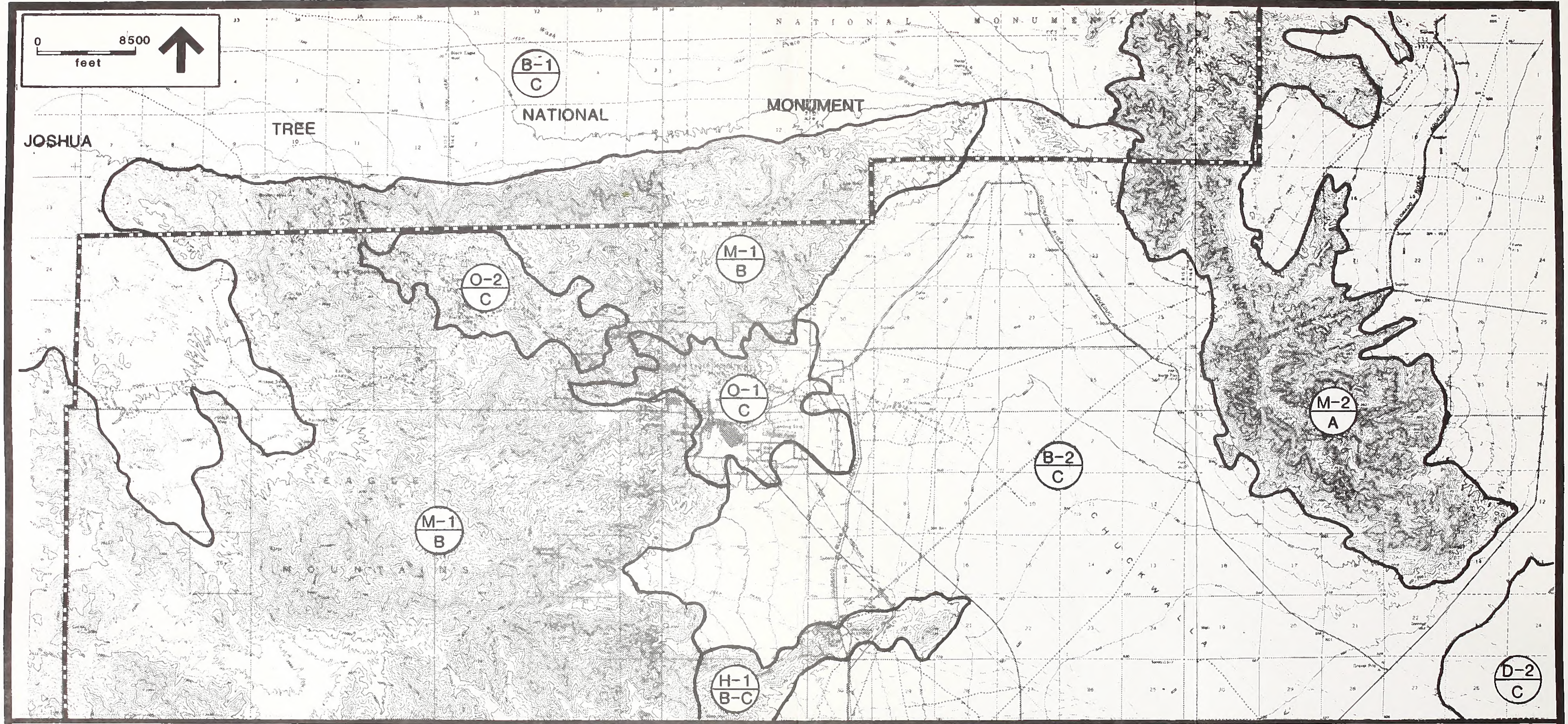

FIGURE 67. SCENIC QUALITY, NORTHERN PORTION

A-O — Rating Unit

Landscape Character Type

Q — Scenic Quality Rating

LANDSCAPE CHARACTER TYPES AND UNITS			SCENIC QUALITY RATING	
Mountains	M.1	Eagle Mountains	B	Medium
	M.2	Coxcomb Mountains	A	High
Steep Hills & Foothills	H.1	Eagle Mountain Foothills	B-C	Medium-Low
Basins & Bajadas	B.1	Pinto Basin	C	Low
	B.2	Chuckwalla Valley	C	Low
Dunes & Dry Lakes	D.2	Chuckwalla Valley Dunes	C	Low
Mined Areas & Associated Facilities	O.1	Eagle Mountain	C	Low
	O.2	Black Eagle	C	Low

Mountains

M.1 Eagle Mountains
M.2 Coxcomb Mountains
M.3 Chuckwalla Mountains

Landscape Character: These mountain areas are characterized by extremely rugged and rocky terrain rising sharply (25 percent slopes and greater) from the adjacent relatively flat desert floor. They are dissected by steep canyons formed by drainages that have wide, flat wash bottoms. Vegetation consists of a very sparse desert scrub cover which contributes to the coarse-textured appearance. Desert riparian trees occur along drainageways. The variation of color is darker than the adjacent lighter tan-brown and greens of the basins and includes shades of gray, mauve, brown, and tan. The variety of colors results in a mottled appearance caused in part by the active upthrust of lighter-colored materials through the darker overburden. This is characteristic of mountains throughout this area, and the Pinto Mountains to the north were named after this mottled, or "pinto," effect. The Coxcomb Mountains have the most rugged terrain. They are very angular and vertical, resulting from active uplift. There are rock spires up to 300 feet in height in some locations.

Scenic Quality: The scenic quality of these desert mountains is a result of the strong contrast with the adjacent basin landform, the variety of colors and hues, and the striking irregular form and skyline. They provide a backdrop of views and become the focus of attention. Within the immediate study area (see Figures 66 and 67), mountains have a higher scenic quality than any other landform. However, in a regional context, the Eagle Mountains and Chuckwalla Mountains are fairly typical and are representative of average scenic interest. The overall scenic quality is medium. The Coxcomb Mountains have a higher level of visual diversity and their scenic quality is rated high.

Steep Hills/Foothills

H-1 Eagle Mountain Foothills
H-2 Orocopia Mountain Foothills

Landscape Character: These landforms are adjacent to the more mountainous areas but are lower in elevation and smaller in scale. Colors are the same dark, muted shades of gray, mauve, brown, and tan. Vegetative cover is very sparse desert scrub, and in some cases, no cover exists.

Scenic Quality: The steep hills and foothills do lend visual variety to the area but lack the scale and vertical dimension of the mountains. The forms are more subdued and rounded. Overall scenic quality is medium-low.

Basins and Bajadas

B-1 Pinto Basin
B-2 Chuckwalla Valley

Landscape Character: Broad and expansive, these areas form a relatively flat to gently sloping base plane from which the mountains abruptly rise. The upper edges of the basins are typically characterized by bajada formations of gently sloping fanned areas of alluvial soil deposited by the drainage off the mountains. The bajada fanning out from the Coxcomb Mountains is more distinct than others. It is covered with coarse gravel with a dark surface, "desert pavement." Other colors of the basins and bajadas are lighter shades of tans and browns, as well as the various shades of green of the vegetative cover. In most areas there is an even, if sparse, distribution of trees and shrubs.

A variety of land uses occurs including the developed areas of Desert Center and Lake Tamarisk; a number of linear elements such as paved and unpaved roads, power lines, railroad tracks, and the Colorado River Aqueduct, as well as agricultural fields and a landing strip.

Scenic Quality: The contribution these basins and bajadas lend to the visual experience of the area is the expansive panoramic views across the desert floor to the surrounding mountain ranges, virtually uninterrupted by topographic relief. It is in contrast to these areas of low visual interest that the adjacent mountains gain significance. The land uses in the area, particularly the linear elements, add some visual variety, but detract from the simplicity of the landscape. The overall visual quality is low.

Dunes and Dry Lakes

D-1 Hayfield Dry Lake
D-2 Sand Dunes

Landscape Character: Although lying within the basin/bajada formation, these areas are distinctly different in their homogeneous form, line, color, and texture. The flat or slightly undulating areas are of an even color which is slightly lighter than the adjacent basins and are the lowest areas of the landscape. The vegetation ranges from a very sparse shrub cover to no cover at all.

Scenic Quality: The areas lack the striking visual quality of other dunes and dry lakes in the region due to the small scale and unconnectedness to other dune or dry lake areas. Overall scenic quality is low.

Mined Areas and Associated Land Uses

O-1 Eagle Mountain
O-2 Black Eagle Mines

Landscape Character: This highly modified landscape consists of open pit and surface mines, tailing piles, tailing ponds, plant operation and equipment areas, a sewage treatment plant, and a residential area associated with the mining operations. The landfill area makes up approximately 2,772 acres of the larger 4,695-acre project specific plan area. Extending up into the mountainous slopes, the mined areas are distinctly different from the adjacent undisturbed areas. The form of the mined area is defined by the repetitive slope and terrace grading which has created curvilinear bands of elevation change. Exposed cut or fill areas are of a lighter tan-gray color than the natural gray- brown-mauve of undisturbed areas. The tailing piles consist of the coarse tailing taken from the ore body and is a darker color similar to the surface rocks of the undisturbed areas. The slopes of the mine and tailing piles have a very regular, even appearance and texture, except for a few widely scattered rabbit bushes which have established themselves, compared with the ruggedness and coarseness of the natural topography.

Scenic Quality: The modifications of the mined area add significant visual variety to the scenic quality of the area. However, they create a strong disharmony with the form, line, color, and texture of the mountain formations in which they are located. Overall visual quality is low.

d. Seen-Area Analysis

Figure 68 illustrates a boundary from which the project site could be seen based on topography and identifies the KOPs and the distance zones. These topics are discussed in detail below.

Key Observation Points

Desert Center, Interstate 10, the Lake Tamarisk subdivision, State Highway 177, the Pinto Wash hiking route, and ridge points in both the Eagle and South Coxcomb mountains were designated as KOPs (see Figure 68). A KOP was not selected for the Chuckwalla Mountains because they are over 15 miles away from the project area. A seen-area analysis was conducted for each KOP with the focus on what can be seen when looking towards the project area.

Distance Zones

Within the seen area, the foreground/middle ground (less than 5 miles) and background (5-15 miles) distance zones were delineated for the KOPs (see Figure 68). The project area lies in the background view of all KOPs with two exceptions: depending on the height and angle of view, a number of ridge points in the Eagle Mountains have foreground/middle ground views

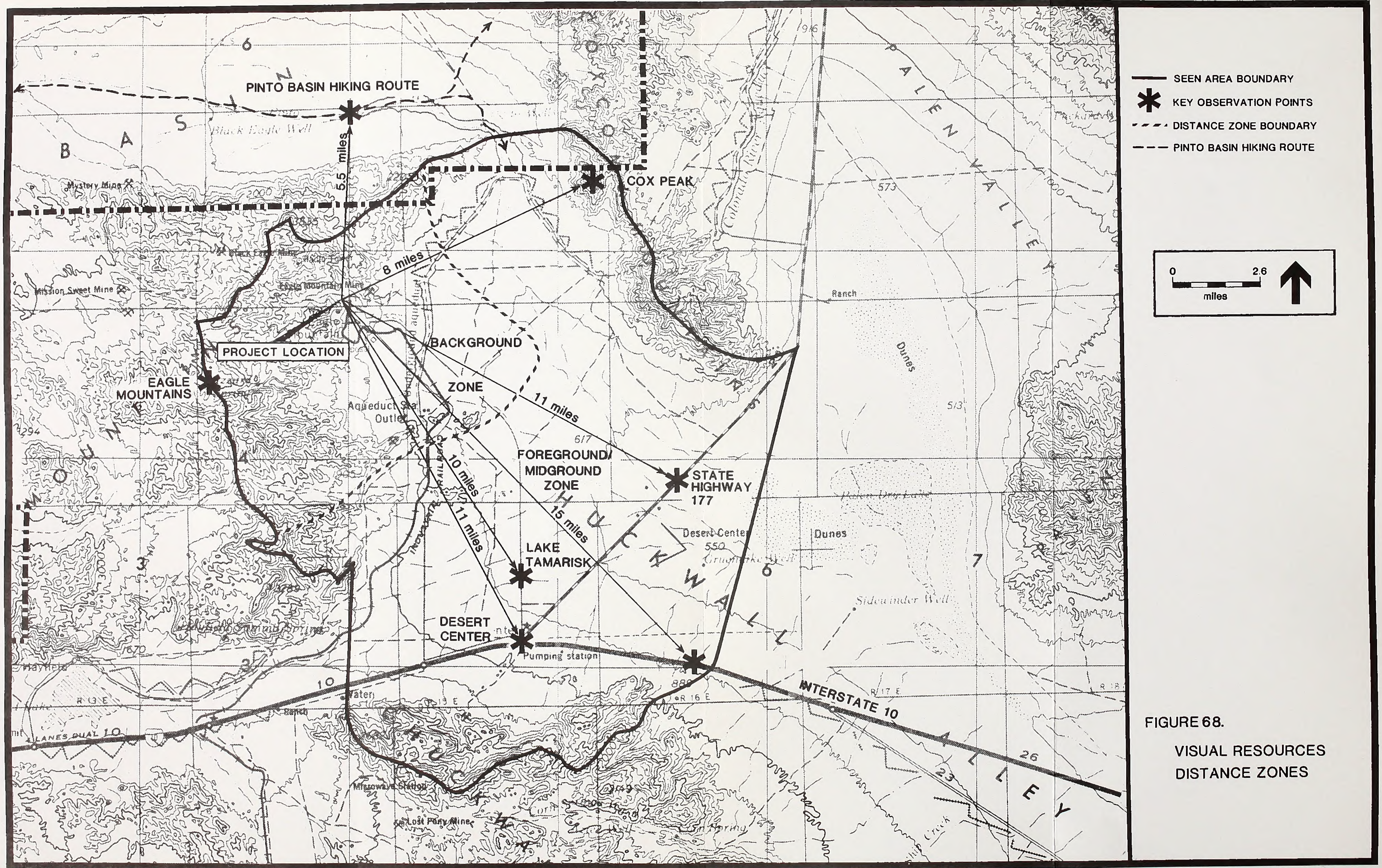

FIGURE 68.

VISUAL RESOURCES
DISTANCE ZONES

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of the project area, and the sky area above the project area is highly visible from the Pinto Basin hiking route and is within the south-facing foreground/middle ground of that route.

Views of Project Area and Viewer Attitudes

The views of the project area from each of the KOPs is described as follows:

Desert Center (elev. 900'). The views of the project area from Desert Center are significantly obstructed by the steep hills (elev. 1,200'-1,500') in the middle ground. These hills are five to seven miles to the northwest and block the view of most of the mined area and associated land uses, leaving only the upper slopes of the overburden piles visible in the background at approximately 12 miles. A close look is required to distinguish between the lighter slope areas and the naturally occurring lighter areas to the south of the mine. Visual contrast is evident but low. The sensitivity level of viewers is moderately low due to the distance, the partial screening of views, and the mine's existence in the area for over 30 years.

Interstate 10. Traveling from the west, views of the project area are blocked by the Eagle Mountains until a point approximately three miles west of Desert Center. From there to a point approximately three miles east of Desert Center, only the upper slopes are visible, as described above. The project area becomes noticeable to westbound travelers at a point between four and five miles to the east of Desert Center. The linear terraces, lighter slopes, and shadow patterns are barely noticeable at this distance·of 15 miles. Visual contrast is low. Viewer sensitivity is moderately high due to the high volume of viewers and because the Eagle Mountains become a focal point for views across the Chuckwalla Valley.

Lake Tamarisk (elev. 750'). Although this area is two miles to the north of Desert Center, the change in the angle of view is not enough to provide any greater visibility of the project area than described for Desert Center. The steep hills in the middle ground still block most of the views, and vegetation within this residential area provides additional screening. Visual contrast level is low. Viewer sensitivity is moderately high due to the residential and recreational character of the land use.

State Highway 177. Desert Lily Preserve was selected as a KOP along this route. Although not indicated on any sign, it is shown on the BLM's desert access guide maps and attracts seasonal sightseers whose viewer sensitivity levels are high. Background views of the Eagle Mountains are accentuated by the Chuckwalla Valley in the foreground, but at a distance of 11 to 12 miles, the project area is barely visible. The mine areas are noticed as having slight variations in color and pattern. The even distribution of trees and shrubs provide additional screening of travelers' views. Visual contrast is low. Viewer sensitivity is potentially quite high.

Cox Peak (elev. 3,335'). Located in the Coxcomb Mountains just south of Joshua Tree National Monument, this point offers an unobstructed view of the surrounding landscape including the Eagle Mountains. The upper and western portions of the project area are screened from view by ridgelines, but the lower mine area and the associated land uses can be seen. Other peaks or ridge points further south in the Coxcombs have a full view of the project area. At a distance of approximately eight miles, the slopes, terraces, and tailing pile can be distinguished and the visual contrast level is medium. The sensitivity level of individual viewers would be high, but the volume of use these points receive is very low: most of the use of the Coxcomb Mountains occurs in the central or north portions.

Pinto Wash Hiking Route. The project area is not visible from this route because the Eagle Mountains form a ridgeline (elev. 2,000'–3,500') that blocks views. The sky area above the project site is highly visible though and is within the foreground-middle ground of the south-facing views of the route. Use volume is moderate as this is a common hiking route in the monument, particularly in the winter. Monument visitors in this area have expectations for a wilderness recreation experience; therefore, viewer sensitivity is very high.

Eagle Mountains. Depending upon the elevation and the angle of view, the project area can be highly visible or completely unseen from the surrounding mountains. Most people use the lower-elevation canyons and washes for recreation and do not see the project area, but hikers following the ridgelines have excellent views of the surrounding landscape, including the mine area. In fact, the ridgelines adjacent to the north and south of the mine provide the best nonaerial views of the project area. From these points all elements of the project are highly distinct and the visual contrast with the adjacent undisturbed areas is very high. Viewer sensitivity can range from high, for those people seeking a wilderness experience, to low, for those people seeking a better view of the mine area. Refer to Section IV.B.10 for simulations of views from the Eagle Mountains and from the Coxcomb Mountains.

e. Project Area Analysis

Sensitivity Level

The sensitivity level of an area is the measure of public concern for that area's scenic quality. For the project area, it is based on the types, locations, and quantity of viewers as well as general public interest as expressed in meetings and letters of concern. Although the sensitivity level of the viewers at different locations varies from high to low, the overall sensitivity level of the project area was determined to be moderate.

Existing Visual Contrast Level

The magnitude of past alterations to the landscape of the project areas has resulted in a high contrast with the form, line, color, and texture of the adjacent undisturbed landform and

vegetation. Although only the upper-elevation slopes are visible from most observation points, the mine area itself is a dominant visual feature in the immediate area with a high visual contrast with the undisturbed adjacent areas.

Visual Resource Management Class

The factors considered in determining the visual resource management (VRM) class for an area include the synthesis of scenic quality, sensitivity, and distance zones. Figure 69 shows the VRM classes within the project area. The scenic quality in the project area is medium to low (due to the extensive disturbance of the open pit mine area), the sensitivity level is moderate, and it lies mostly within background zones of KOPs. This results in the VRM Class IV designation for project activities. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed. It applies to areas such as this one, where the scenic quality has been significantly reduced due to extensive cultural modifications, and where there is potential for enhancement. This is an interim classification until higher VRM class objectives can be met. The objective of Class IV is to provide for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of view attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

A small area of VRM Class III was also defined. This area is on the slopes of the Eagle Mountains that are estimated to be visible and within the foreground/middle ground zone of the Eagle Mountain KOP. The scenic quality is medium and the sensitivity level is moderate, resulting in a Class III designation. Within a Class III area, contrasts to the basic elements (form, line, color, texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape, but the changes should remain subordinate to the existing characteristic landscape.

f. Rights-of-Way and Land Exchange Properties

Railroad Right-of-Way

The existing railroad right-of-way and the proposed northern spur right-of-way both pass through the basins and bajadas landscape of the Chuckwalla Valley. From the Eagle Mountain townsite, the railroad continues south approximately 52 miles through similar landscapes of low visual quality. The railroad has been unused for five years, and although it is noticeable from some viewpoints, it is not a dominant feature in the landscape. The land within the proposed right-of-way consists of undisturbed flat desert terrain or areas previously used as tailing ponds for mine operations.

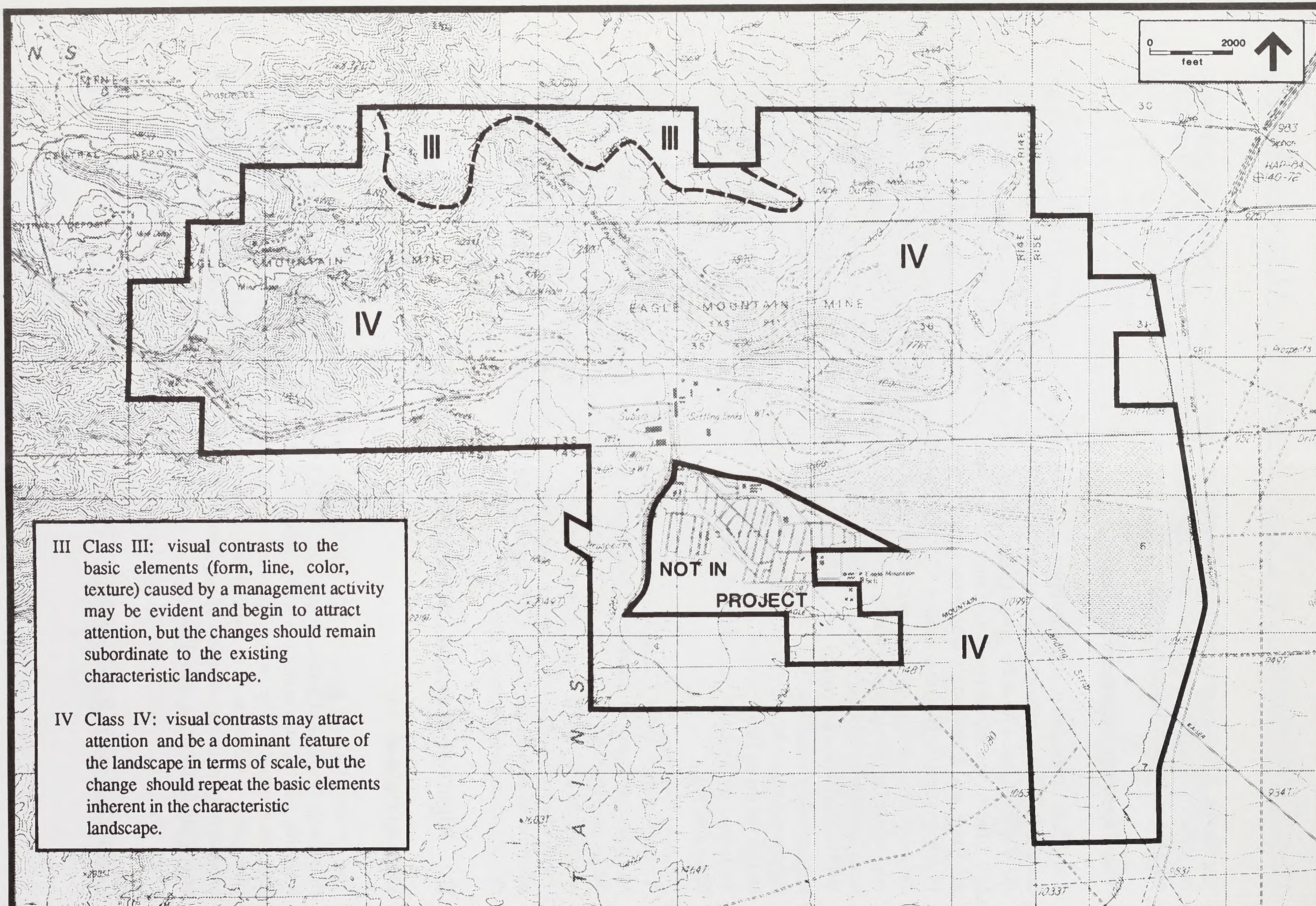


FIGURE 69. VISUAL RESOURCE MANAGEMENT CLASSES

Eagle Mountain Road Right-of-Way

The existing road right-of-way and the proposed right-of-way for the northern extension of this road also pass through the basins and bajadas landscape of the Chuckwalla Valley, an area of low visual quality. The existing Eagle Mountain Road runs from the I-10 interchange to the Metropolitan Water District pumping station, approximately seven miles. It is a paved, two-lane, 20-foot-wide roadway with very low traffic volumes, since it now serves only the pumping station. Although it is visible from I-10 looking north, it is not a dominant visual element in the landscape.

Eagle Mountain Road Extension

The Eagle Mountain Road Extension will begin just south of the MWD pumping station and will continue northeasterly at first and then northwesterly before heading northerly to an existing landfill on-site haul road. This partially existing dirt road is approximately 15-18 feet wide in most areas. The proposed road extension would run over flat desert terrain or areas previously used as tailing ponds.

Land Exchange Properties

Approximately 3,271 acres of BLM-owned lands (the "selected lands") within the project site boundaries will be exchanged for Kaiser-owned lands (the "offered lands") along the Eagle Mountain rail line right-of-way. The selected lands consist of portions of the Eagle Mountains immediately adjacent to the mine site, flat desert terrain east of the mine, and parcels within the Eagle Mountain townsite. The visual quality of these areas is generally low, due to the extensive nature of previous ground disturbances. The moderate visual quality of the non-disturbed portions of the Eagle Mountains is diminished by the proximity to the mine. The offered lands occur predominantly within the basins and bajadas landscape and are primarily non-disturbed areas of flat desert terrain, identified as desert tortoise habitat.

g. Windblown Debris and Dust

The vicinity of the project area is currently sparsely populated, with few sources of debris. Thus, the amount of windblown debris is small. Dust and wind conditions are discussed in the Air Quality issue section.

h. Night Lighting

The project area is currently inactive, with no mining activity occurring. As discussed in the Land Use issue section, the surrounding population level is low at the Eagle Mountains townsite. The only other major land use is the return-to-custody facility, which is lit at night. These land uses do not contribute significantly to night lighting.

2. Recreation

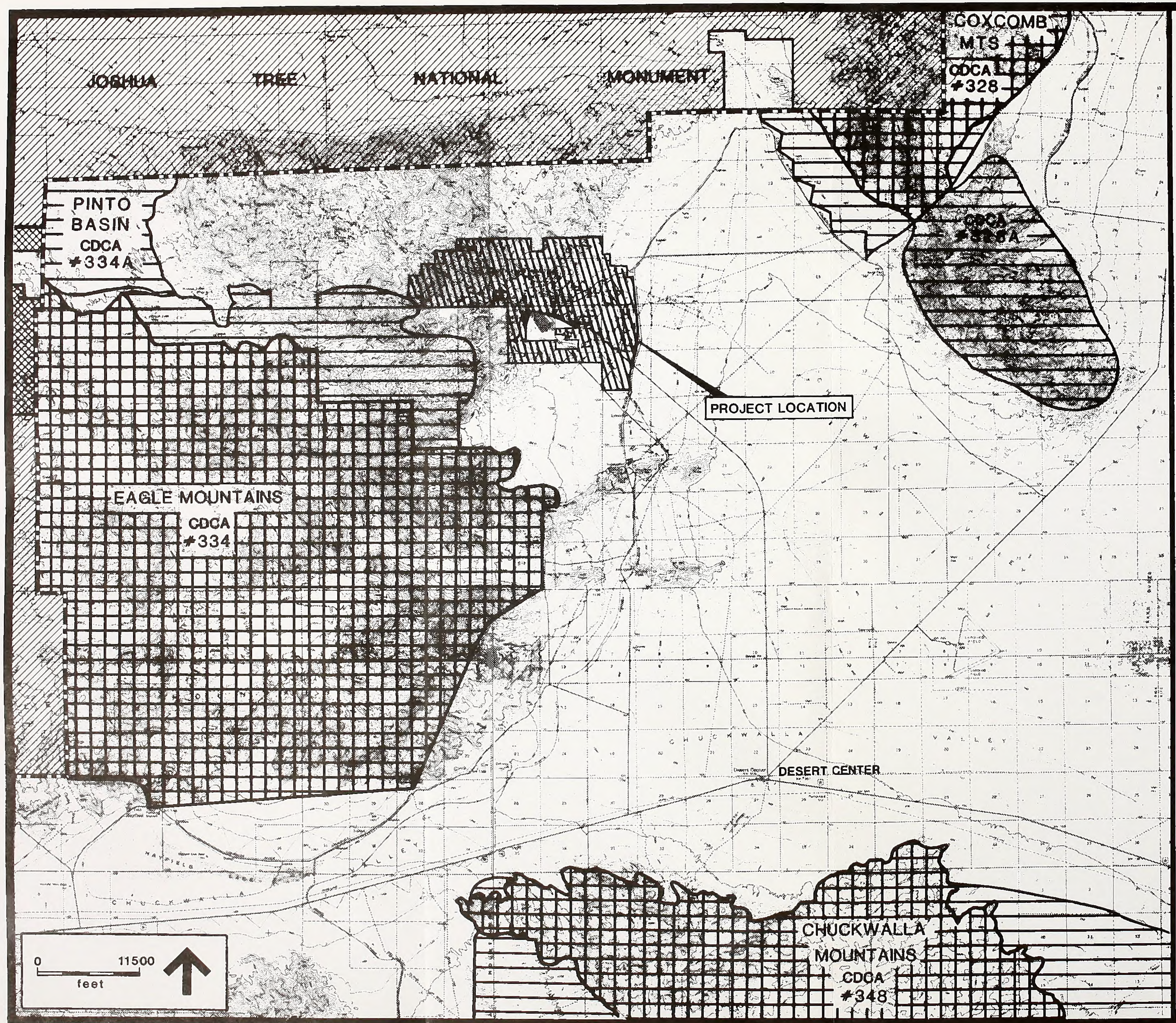
a. California Desert Conservation Area

As described previously, the CDCA Plan developed by the BLM addresses a wide range of recreation opportunities based on the four multiple use classes: C (Controlled), L (Limited), M (Moderate), and I (Intensive). As discussed in the Land Use section, and shown in Figure 53, all four classes occur around the project area. As private land, the project area is not classified, but is surrounded by Class I land. The Eagle Mountains to the southwest are shown as Class C, and areas to the east and south are Class M. The BLM portion of the Coxcomb Mountains, abutting the south and east boundary of Joshua Tree National Monument northeast of the project site, are Class L. The multiple use recreation guidelines for Class C recommend nonmechanical types of recreational experience which generally involve low to very low user densities. Class L is suitable for recreation which generally involves low to moderate user densities.

There are no designated Areas of Critical Environmental Concern in the immediate vicinity of the landfill site itself. The two closest ones are Sidewinder Well south of Palen Dry Lake and the Chuckwalla Bench south of the Chuckwalla Mountains. An ACEC is defined as an area "where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes." The project rail right-of-way passes through the Chuckwalla Bench ACEC, which is known desert tortoise habitat, and the Salt Creek ACEC, which is critical habitat area for desert pupfish and Yuma clapper rail (see further discussion in biology section of this EIS/EIR). The rail and road rights-of-way south of the project site pass through lands designated Multiple Use Class M and through areas designated Class L (Limited Use) south of Interstate 10 and the Orocopia Mountains.

Hiking and backpacking are the recreational opportunities identified by the BLM for a large portion of the Eagle Mountains area southwest of the project (Figure 70). The area is open to motorized vehicles on existing routes, except where posted as closed, but the extreme ruggedness and diversity of the terrain limit access to four-wheel driving for pleasure along the major washes, such as Big Wash. Smaller canyons and enclosed interior valleys provide outstanding opportunities for solitude or a primitive and unconfined type of recreation, similar to the adjacent wilderness areas of Joshua Tree National Monument. The Sierra Club sponsors an annual organized hike in the Eagle Mountains.

The Coxcomb Mountains northeast of the project site (see Figure 70) offer similar opportunities on a more limited basis due to even more rugged terrain. Most recreational uses occur in the northern portions of these mountains where the terrain allows easier access.



BUREAU OF LAND MANAGEMENT
WILDERNESS STUDY AREAS

RECOMMENDED FOR NON-WILDERNESS DESIGNATION

RECOMMENDED FOR WILDERNESS DESIGNATION

JOSHUA TREE NATIONAL MONUMENT

DESIGNATED WILDERNESS AREAS

POTENTIAL WILDERNESS ADDITION

FIGURE 70.

WILDERNESS DESIGNATIONS

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LDOUT BLA

South of Desert Center, the Chuckwalla Mountains (see
recreation. The primary recreational activities include h
hounding, four-wheel-drive access, nature study, and hiki
the central portion where larger desert washes provide ea

b. Joshua Tree National Monument

The most significant recreational land use element in t
Monument (JTNM) (Figure 71). A full range of rec
including camping, hiking, backpacking, sight-seeing, pho
study. Visitor use is highest in the winter.

The main road from the northern headquarters at the O
Cottonwood Visitor Center passes by the western extent
road, JTNM visitors enjoy a variety of sight-seeing opport
views of Pinto Basin to the changing vegetative commun
the elevation drops approximately 2,000 feet, the Moja
Desert. Although the Eagle Mountains are highly visible f
be seen.

Leading from this main paved road is a dirt road, Old Dale
passage to the north across Pinto Basin and up into the P
spectacular views of the basin and surrounding mountains
point for persons accessing wilderness areas on foot.
corridors is either designated wilderness area or areas whic
designation, where no vehicular access is allowed. Visi
and because of this, trails are not delineated and marked,
Wash is a major backpacking route that parallels the no
close proximity (between one and four miles) allows e
Many hikers traverse this route east, and some continue
Coxcomb Mountains are so rugged that access into the r
central portions. Most use occurs in the northern half. M
the sheltered canyons at the base of the mountains. These
Basin. Solitude and stillness are the primary amenities
provide

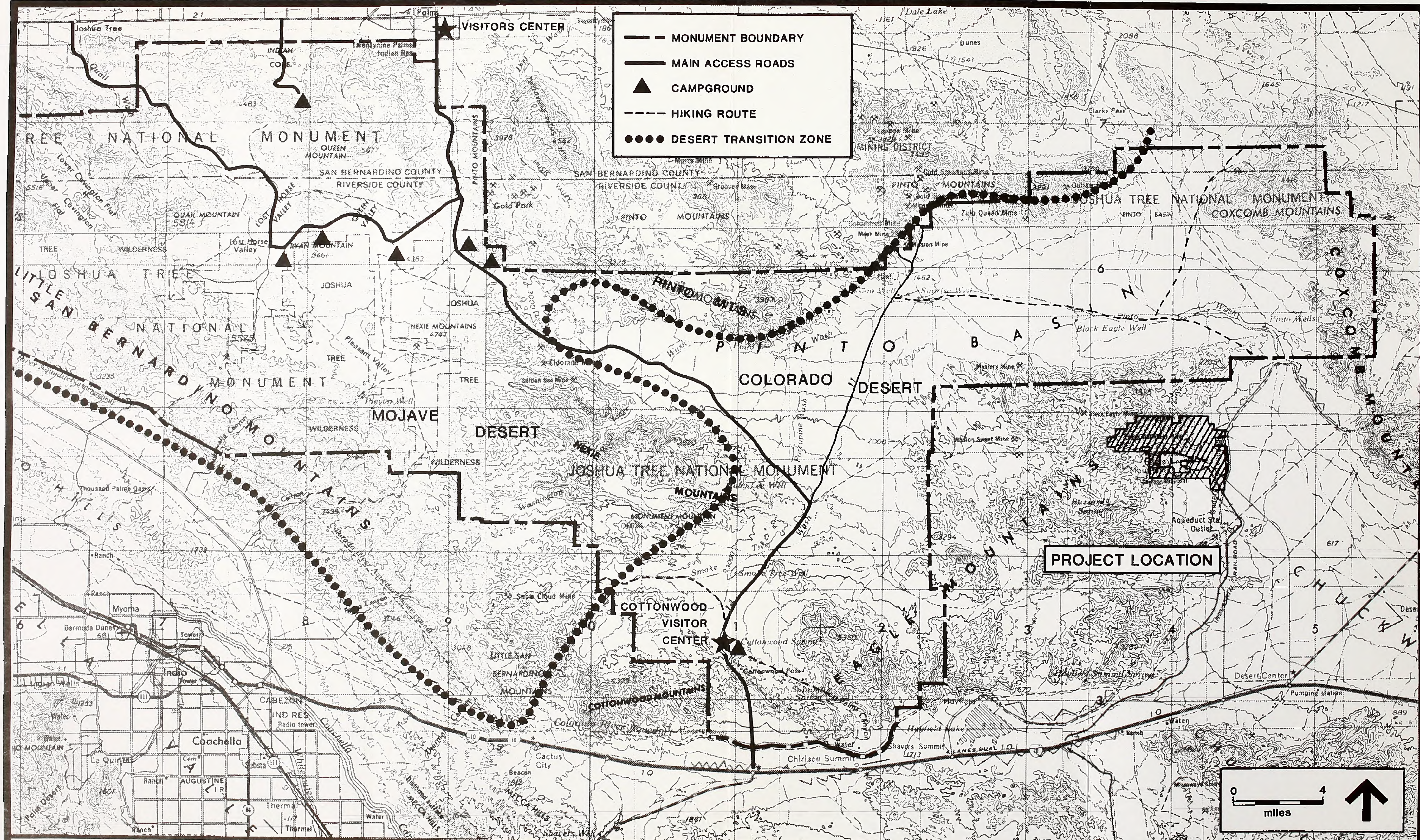


FIGURE 71. RECREATION:JOSHUA TREE NATIONAL MONUMENT

3. Wilderness

a. California Desert Conservation Area

In 1976, the Federal Land Policy and Management Act directed that lands under BLM jurisdiction be inventoried and evaluated for wilderness potential and that recommendations be made to Congress as to the suitability or nonsuitability of each Wilderness Study Area (WSA) for inclusion into the National Wilderness Preservation System. Portions of the Eagle, Coxcomb, and Chuckwalla mountains and Pinto Basin were identified as WSAs. Subsequent resource analysis for each of those WSAs led to suitable recommendations for parts of three of those WSAs: Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains. Those areas recommended as suitable for wilderness designation are represented as Multiple Use Class C.

Areas designated as Class C have highly significant resource values including wilderness, wildlife, cultural, scenic, botanical, geologic, and others. To protect these significant resource values, any suitable areas not designated as wilderness by Congress will revert to Multiple Use Class L designation until a plan amendment makes a final classification.

Until Congress makes a final determination on wilderness designation, the BLM will manage all WSAs "so as not to impair the suitability of such areas for preservation as wilderness," as described in the Interim Management Policy guidelines.

The following is a brief description of the Wilderness Study Areas in the vicinity of the project area (Figures 70 and 72-75). Wilderness characteristics discussed are naturalness, solitude, primitive and unconfined recreation, and special features.

Coxcomb Mountains Wilderness Study Area (CDCA-328)

The Coxcomb Mountains WSA includes 70,993 acres of BLM lands, 2,286 acres of state lands, and private inholdings of 1,729 acres, totaling 75,008 acres. The WSA wraps around the northeast corner of Joshua Tree National Monument encompassing portions of the Pinto and Coxcomb mountains. Included within the borders of the study area is terrain that is as diverse and complex as any found within the California Desert. The major landforms within this WSA are the Coxcomb and Pinto mountains and the transition area between them. Vegetation is typical of the surrounding areas and representative of that found in both the Mojave and Colorado deserts. Transition areas, where the deserts overlap, display a mixture of vegetative types. Creosote bushes are dominant throughout the area except in and near the washes where smoke trees, desert willow, and palo verde are more noticeable. From a distance the mountain sides appear barren, but they actually support a large variety of shrubs and cacti. Desert bighorn sheep and burro deer inhabit the area.

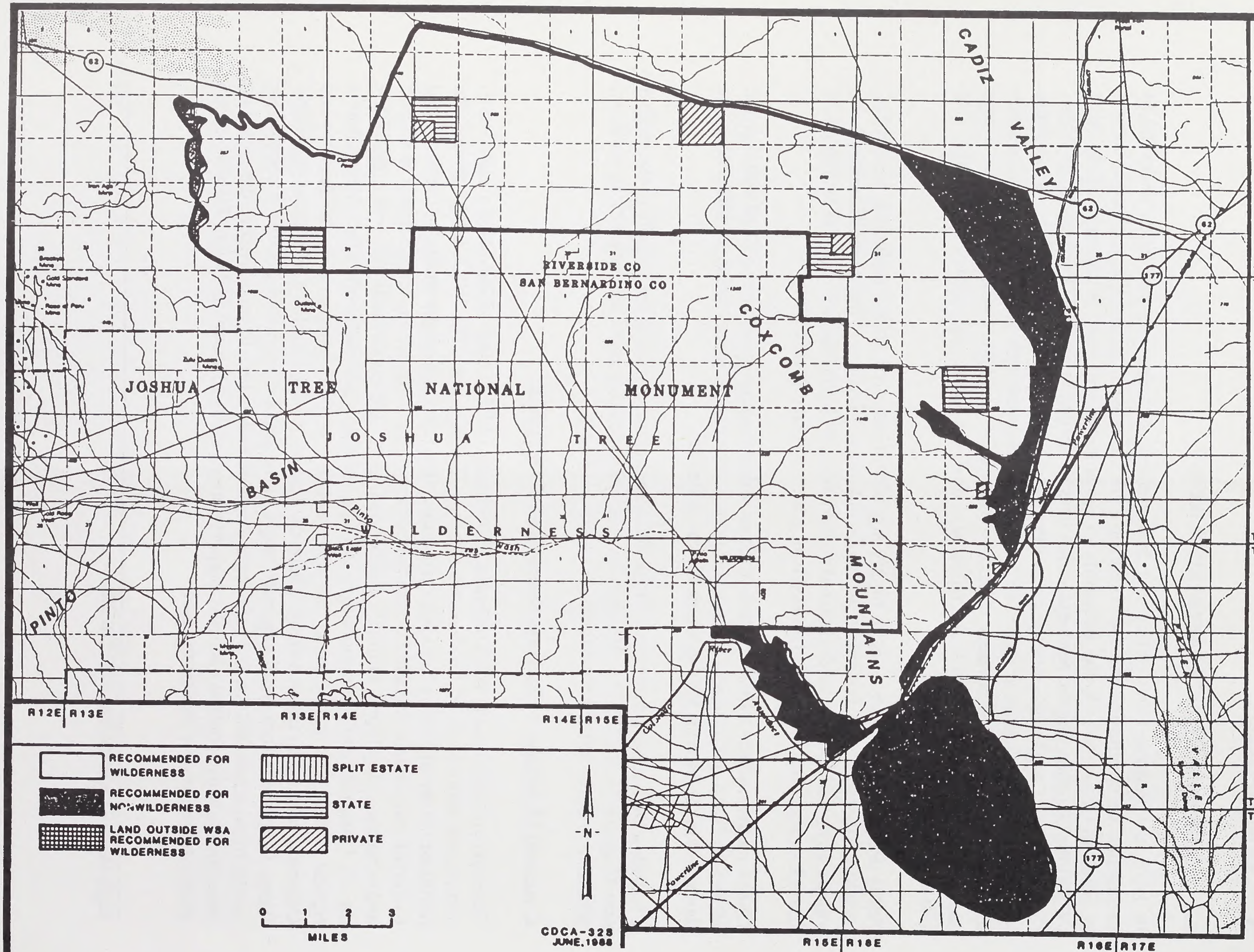
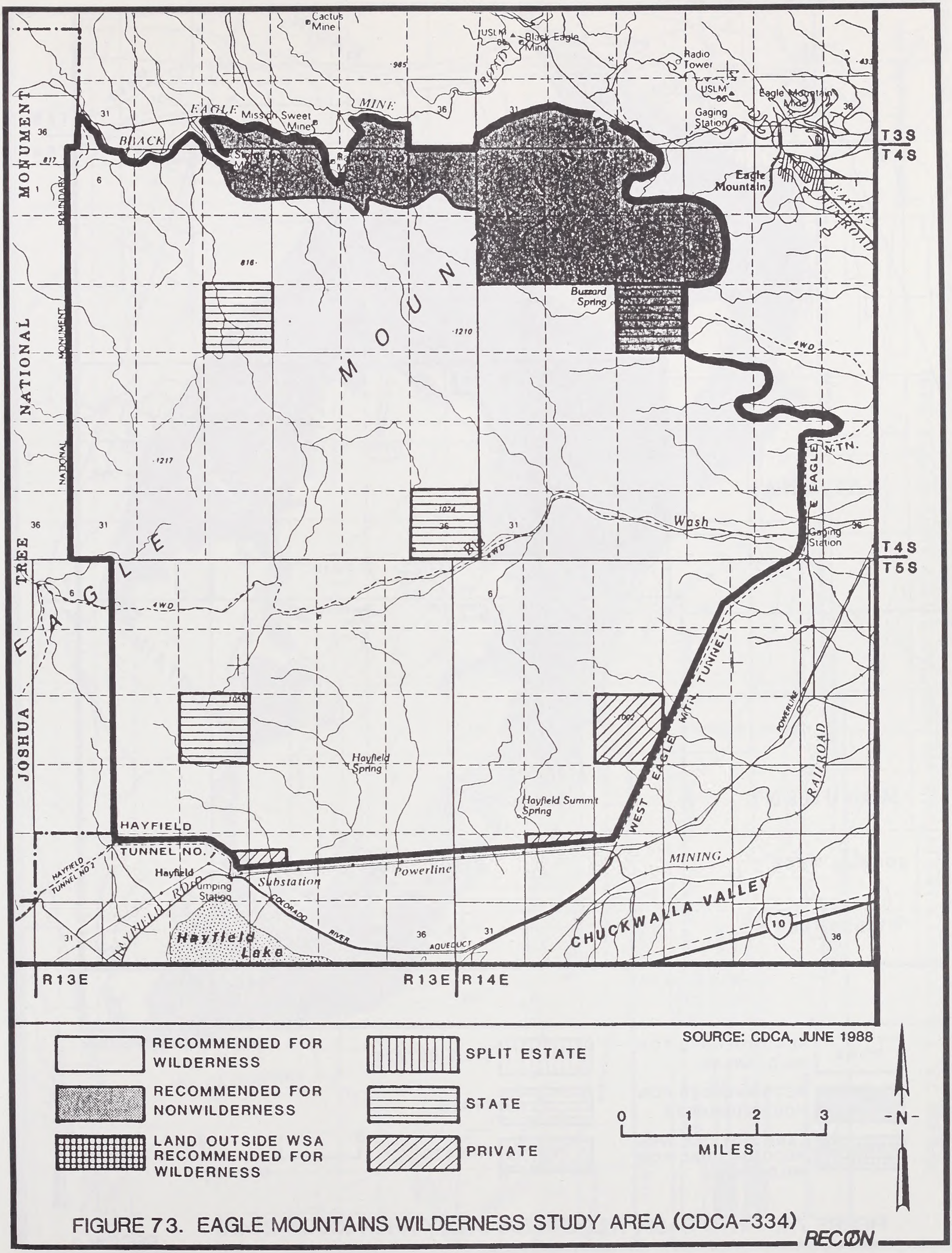


FIGURE 72. COXCOMB MOUNTAINS WILDERNESS STUDY AREA (CDCA-328)

SOURCE: CDCA, JUNE 1988

RECON



SOURCE: CDCA, JUNE 1988

FIGURE 73. EAGLE MOUNTAINS WILDERNESS STUDY AREA (CDCA-334)

RECON

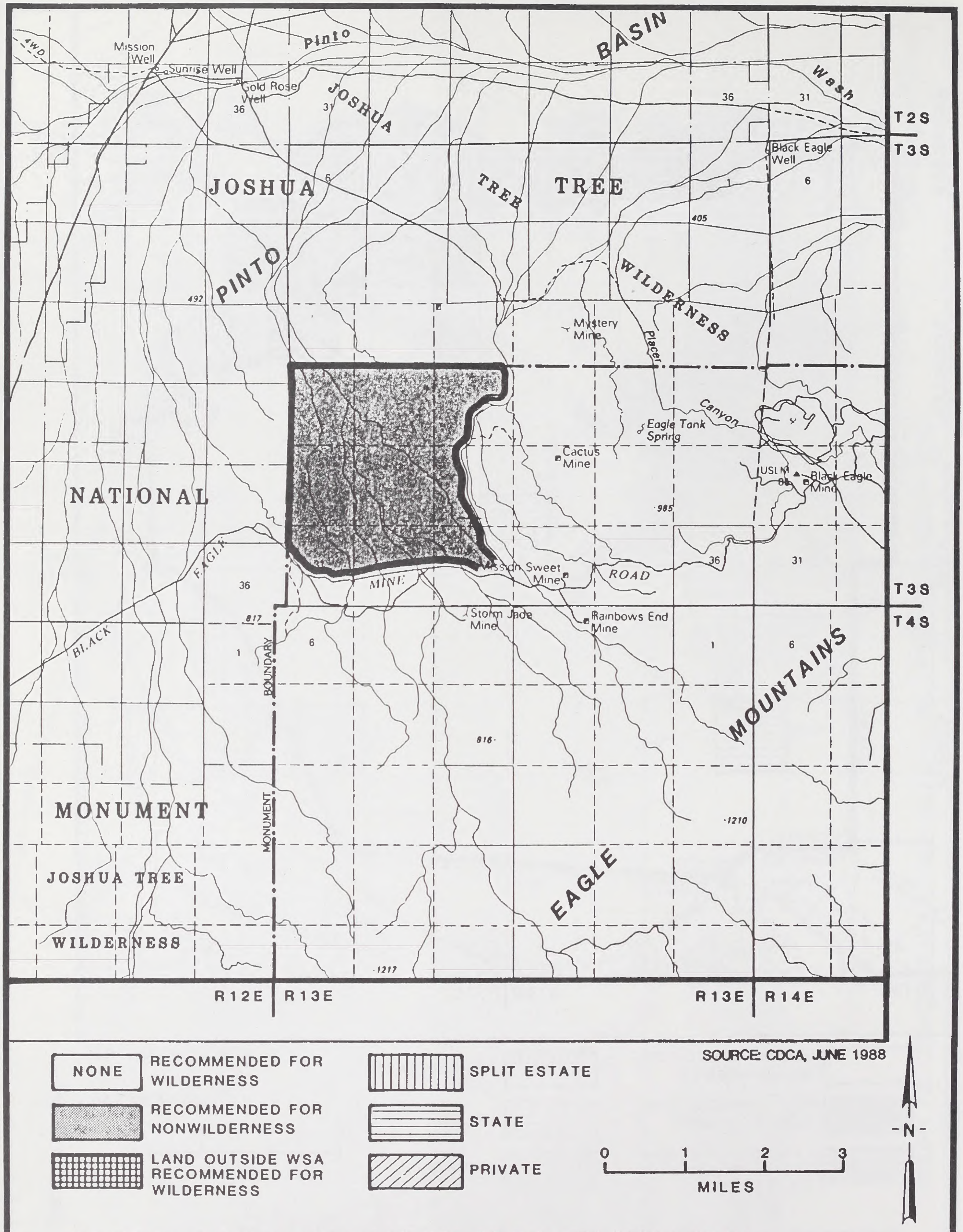
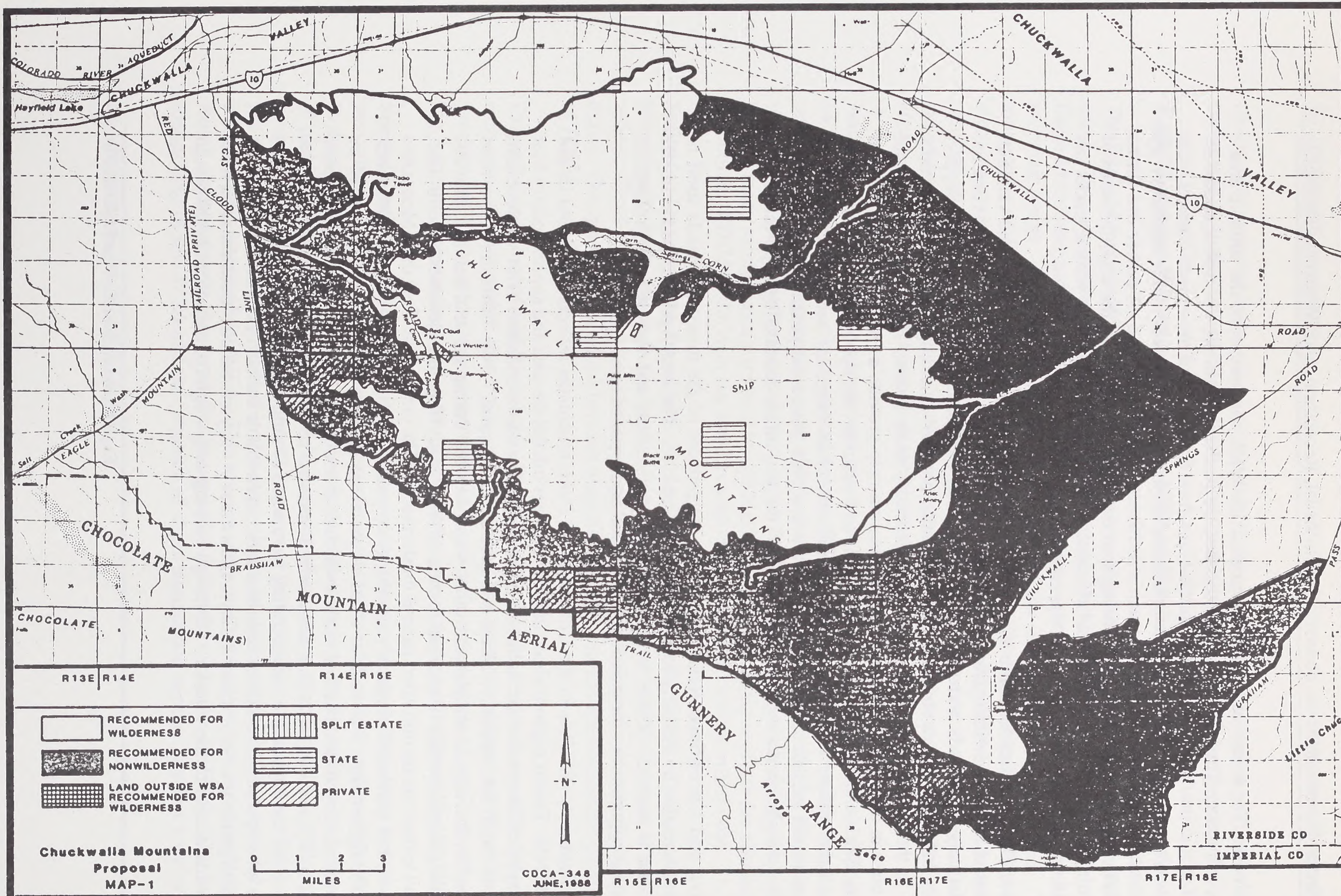


FIGURE 74. PINTO BASIN WILDERNESS STUDY AREA (CDCA-334A)

RECON



SOURCE: CDCA, JUNE 1988

FIGURE 75. CHUCKWALLA MOUNTAINS WILDERNESS STUDY AREA (CDCA-348)

RECON

Naturalness. The forces of nature that created this WSA continue to be the suitable area's primary influence. Throughout most of the area, the landscape exhibits a primitive character. Rugged terrain insulates much of the suitable area from the effects of man-made features such as highways, mining activities and facilities associated with the Colorado River Aqueduct. In the nonsuitable portion of the WSA, man's influence is more apparent. A power line forms the suitable/nonsuitable boundary. Throughout the southern portion of the area, the scars of past mining activities has a detrimental effect of naturalness. Off-highway vehicle tracks can be found on the flat, eastern bajadas, also recommended nonsuitable.

Solitude. Opportunities for solitude vary due to the diversity of the landforms and variation in vegetative patterns resulting from the differences found in the Mojave and Colorado deserts. The relatively flat bajada and shallow washes along the nonsuitable eastern edge support primarily low growing shrubs which provide little physical shielding. In the larger sandy washes in the north, vegetation is taller and generally more dense. Here, tall creosote and smoke trees in addition to other types of vegetation help provide a feeling of seclusion and isolation. Within the jumbled rocky mountains and outcrops, the opportunities abound. The texture of the surface is such that even at relatively close range the sense of solitude and seclusion would prevail. Views into JTNM are available from most peaks, and the vastness and sense of isolation is overwhelming. Overall, the area offers outstanding opportunities for solitude.

Primitive and Unconfined Recreation. The ruggedness of the mountains lends itself to primitive recreation by virtually barring the use of vehicles. The area is pristine, and evidence of past use is limited. There is no feeling of confinement and the entire area supports outstanding opportunities for primitive and unconfined types of recreation.

Special Features. Wildlife in the Coxcomb and Pinto mountains reflects that found in and around JTNM. Desert bighorn sheep and burrow deer inhabit the area and approximately four square miles of desert tortoise habitat are located within the boundaries. The southwestern portion of the WSA supports at least one prairie falcon eyrie. Two "drinkers" have been developed in the area to supplement other water sources during the arid summer months. Outstanding scenic quality is a special feature of this WSA. Here, the elements of color, line, form, and texture create unrivaled natural masterpieces. The crest of the Coxcomb Mountains is composed of a series of irregularly spaced, sharp peaks which provide a dramatic silhouette against the lighter sky. The rock-covered slopes along the face of the range are scarred by deeply eroded canyons and shallow washes which drop and cut the bajada into intricate patterns. Random rock outcrops, reflecting miniaturized versions of the surrounding mountains, rise abruptly from the bajada like islands rising from a sea of sand. Layered landforms combine to create what appears from a distance to be a dark impenetrable surface. A closer look provides glimpses of gentle washes, interior valleys, and a maze of canyons which unlock the solid mass and provide access to the interior. Although varying only slightly more than 2,000 feet in

elevation between the highest and lowest points, the irregular shape, coarseness, and dark color, rising rapidly from a smooth desert floor, supports the impression of a much greater variation.

Eagle Mountains Wilderness Study Area (CDCA-334)

The Eagle Mountains WSA includes 58,462 acres of public land administered by the BLM, and 3,178 acres of state lands, totalling 61,640 acres. The major features of this WSA are the Eagle Mountains and Big Wash. Big Wash is the primary drainage for the eastern slope of this mountain range. The area is rugged and, except in the washes, sparsely vegetated. The topography of the area is diverse and extremely complex. Elevation varies from 4,000 feet in the northern mountain peaks, to 1,600 feet in the eastern end of Big Wash. Steep peaks, shear canyons, rugged rock outcrops, smooth bajadas, and large sheets of the desert-varnished rocks called desert pavement combine in constantly changing displays of desert scenery. The study area possesses unique vegetation as described in the Special Features section.

Naturalness. There are few intrusions into the WSA and the majority of the area appears to have been affected primarily by natural forces. Within the interior and in the Big Wash area, only a few past mining operations are visible and these have been obscured by the elements over time. These indistinct scars do not detract from the primitive character of the land. The WSA's many sandy washes are used by off-highway vehicles, but signs of use are eliminated by rainfall. JTNM to the west has acted as a barrier to eliminate random vehicle use.

Solitude. Opportunities for solitude can be found throughout the WSA. Canyons, boulder piles, interior valleys, and, in the washes, vegetation, provide an unlimited source of intimate spaces. Outside of these areas, a sense of spaciousness with unlimited vistas in all directions exists. The opportunities for solitude are magnified by the isolation afforded by the proximity of JTNM.

Primitive and Unconfined Recreation. Opportunities for primitive and unconfined types of recreation abound within this WSA, and in conjunction with the wilderness opportunities available in JTNM, the variety of recreational experiences to be had are exceptional. Picnicking, hiking, rockhounding, and upland game hunting are popular activities within this WSA.

Special Features. Three areas of cultural sensitivity have been identified within the suitable area. Two are located in the northern portion and the third in the central portion of the WSA. In the north, stoneworking tools and debris have been recorded. In the central area, a number of prehistoric sites have been located, the majority of which are petroglyph sites. This area is proposed to be nominated to the National Register of Historic Places. An average of five sites per square mile has been predicted in this area. One rare plant species has been reported near the southwest corner of the WSA. This species, Alverson's foxtail cactus, is a candidate for listing as threatened/endangered and is currently under review by the USFWS. The varied topography of this WSA and the presence of three intermittent springs, support a variety of

important wildlife species. Included among the wildlife which inhabit this area are desert bighorn and burrow deer. The habitat within the study area is essential to the daily maintenance of these populations. The eastern edge of this area includes five square miles of crucial habitat for desert tortoise.

Pinto Basin Wilderness Study Area (CDCA-334A)

Northwest of the Eagle Mountains WSA, this area consists of 3,604 acres of BLM lands. No private lands are included within its boundaries. This WSA is roughly square in shape. The northern and western boundaries are formed by the boundary of JTNM. The southern boundary follows Black Eagle Mine Road. To the east, the boundary follows an unnamed jeep trail between Black Eagle Mine Road and the JTNM boundary. This WSA encompasses a portion of the bajada known as Pinto Basin. The area slopes gently, the relative flatness broken only by a few shallow washes. Vegetation consists of scattered creosote bushes. Elevation varies from 2,000 feet in the southeast to 1,750 feet in the northwest.

Naturalness. In only a few areas is man's work evident, and in every case, these man-made scars are related to mining activity. Primitive routes, adits, and trenches are located within the boundaries of this WSA. However, for the most part, this area is affected primarily by natural forces and man's imprint is substantially unnoticeable.

Solitude. The opportunities for solitude vary within the WSA. Sparse vegetation and the flat terrain provide miles of unrestricted views but offer little shielding to conceal users.

Primitive and Unconfined Recreation. The area's flat terrain precludes difficult and technical types of primitive or unconfined recreation. Because the area contains no interesting or unique features, infrequent hikers using this WSA simply pass through, on their way to destinations elsewhere within JTNM or the Eagle Mountains.

Special Features. This area has no special features.

Chuckwalla Mountains Wilderness Study Area (CDCA-348)

These mountains are characterized by colorful and rugged rock ridges, boulders, hills, and large interior washes. At the southern end is the broad expansive bajada, the Chuckwalla Bench. The majority of the roadless area is affected primarily by natural forces, with man's imprint substantially unnoticeable. The Corn Springs/Aztec Wells Road has been excluded. The Chuckwalla Mountains WSA includes 146,000 acres of BLM lands, 8,024 acres of state lands, and 5,196 acres of privately owned inholdings, totalling 159,220 acres. This broad study area includes the Chuckwalla Mountains, portions of the Chuckwalla Bench in the south, and Chuckwalla Valley in the northeast. As with most of the larger mountain masses within the CDCA, the Chuckwalla Mountains rise abruptly, as an island from the vast sea of sand and

rock. Included within the walls of this rock fortress are an infinite variety of landforms, spatial features, textures, and colors. Steep-walled canyons, inland valleys, large and small washes, isolated rock outcrops, and vast expanses of desert pavement interact with each other and with the other resources and elements to form a constantly changing panorama. Elevation varies widely from the low-lying bajada at 800 feet elevation to the area's highest peak, Black Butte, reaching up to 4,450 feet.

The diverse topography of these areas support an equally diverse plant and wildlife community. Ocotillo, cholla, yucca, creosote, barrel cactus, and nolina are scattered throughout. Iron tree washes lace the surface and support many types of wildlife. Bighorn sheep, burro deer, desert tortoise, raptors, snakes, coyotes, and fox are just a few of the many creatures that make their home here.

Approximately 15 percent of the Chuckwalla Mountains WSA is overlapped by the Chuckwalla Bench ACEC. This area contains important habitat for desert tortoise, a federally listed threatened species. Also, within the northeastern cherry-stemmed area lies Corn Springs ACEC, designated in recognition of its outstanding cultural resources and recreation potential. Both these ACECs are designated in the CDCA Plan, but are farther than 15 miles away from the project area.

Naturalness. Prior to the 1960s, historic use of the Chuckwalla Mountains and the surrounding bajadas was generally restricted to mineral exploration and development. In the suitable areas, a few abandoned mines and access routes exist but these are gradually reverting back to a natural appearance. The area, in general, has more recently attracted recreationists interested in off-highway vehicle use. The mountains are rugged and, for the most part, preclude vehicular use, but the washes support off-highway vehicles of all types. Damage to vegetation in the washes is minimal and the visual impacts of this use is erased following each rain. Overall, the suitable area has maintained its natural condition. The nonsuitable area is more accessible and, therefore, man has had a greater influence on the land. A history of prospecting has resulted in trenches, adits, and primitive roadways scattered throughout the area. The cumulative impacts of these intrusions acts to reduce significantly the nonsuitable area's naturalness.

Solitude. Opportunities for solitude vary. In the suitable areas, the rugged landform varies considerably. These areas support a complex network of large and small washes, ridges, canyons, and inland valleys. Vegetation of all types and sizes reinforces the surface variation to provide seclusion. In most areas, visitors, even at relatively close range, would be shielded from each other.

Primitive and Unconfined Recreation. The same features that provide the background for solitude in the suitable area, tend to ensure outstanding opportunities for primitive recreation. The overall ruggedness of the interior Chuckwalla Mountains has precluded the use of vehicles

and man-made intrusions, and the area has been left in a natural state. Outstanding opportunities for primitive recreation abound. The area is untrammeled. There are no restrictions which would confine users. In the nonsuitable area, opportunities for primitive and unconfined types of recreation are also present. However, in many cases, the imprints of man create constraints that impose a sense of confinement.

Special Features. Historically, the Chuckwalla Mountains have supported Native American populations, and they have left their marks throughout the study area. Petroglyphs, aboriginal rock rings, quarry sites, and other remains attest to the early presence of these people. One area of high sensitivity/significance is included within the suitable boundary.

There is a variety of sensitive plants and animals within the suitable areas. The following BLM sensitive plant species are found here: Alverson's foxtail cactus and California ditaxis. Glandular ditaxis, listed in the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California,* is also located in this area. In the nonsuitable area, one unusual plant assemblage can be found. This feature consists of several large specimens of Munz cholla, the largest cholla in the California Desert and known only from the Chuckwalla Bench and parts of the Chocolate Mountains.

The varied topography and relative abundance of water within this area support a diverse faunal assemblage. This area includes areas of permanent and seasonal range for desert bighorn sheep, a BLM sensitive species. The bighorn sheep herd in these mountains was estimated at 25 individuals in 1980. These mountains also contain a population of burro deer and at least one prairie falcon aerie. Two big game guzzlers are located within the WSA to provide water for bighorn sheep and deer. The lower mountain slopes contain populations of desert tortoise.

The alluvial fan located south of the Chuckwalla Mountains, in the nonsuitable area, is known as the Chuckwalla Bench. This area, well known for dense desert tortoise populations, contains outstanding habitat for a variety of birds, animals, and reptiles. Its quality and diversity were distinctive enough to merit its designation as an ACEC.

b. Joshua Tree National Monument

JTNM was established by proclamation August 10, 1936, to preserve a representative and scenic portion of the Mojave and Colorado deserts for the benefit and enjoyment of present and future generations. The Statement for Management, approved in 1978, establishes land management policies and objectives for the monument.

In 1976, Congress designated more than 467,000 acres of Joshua Tree National Monument as wilderness. Most of JTNM away from the road corridors is wilderness with special rules and regulations governing use (see Figure 70). Motorized vehicles are not allowed within the wilderness areas.

The part of JTNM in proximity to the project site is designated as Natural Environment and Wilderness subzones. Lands within the Natural Environment Subzone (two percent of adjacent lands) are to be managed as follows: "The natural resources and natural processes remain largely unaltered by human activity except for approved developments essential for management, use, and appreciation. Developments are limited to park roads, picnic areas, backcountry parking areas, and three borrow pits." Lands within the Wilderness Subzone (98 percent of adjacent lands) also remain largely unaltered by human activity, except for 1.5 miles of dirt service road. No other development is allowed. Areas designated within the Wilderness Subzone are managed in accordance with the 1916 National Park Service Organic Act (16 U.S.C. 1 et seq.) and the 1964 Wilderness Act (16 U.S.C. 1131 et seq.).

Two large desert ecosystems primarily determined by elevation come together at Joshua Tree National Monument. The Colorado Desert (below 3,000' elevation) in the eastern half of JTNM is dominated by the abundant creosote bush. The higher, slightly cooler, Mojave Desert on the western half of JTNM is the habitat of the Joshua tree. Five fan palm oases also occur within JTNM. Rugged mountains of twisted rock and exposed granite monoliths rise abruptly from the adjacent alluvial fans and vast valley floor. Wilderness values are similar to those described for the BLM's adjacent Wilderness Study Areas. One of JTNM's primary hiking trails is located north of the Eagle Mountains along Pinto Wash and provides east-west access across Pinto Basin from the Old Dale Road corridor to the Coxcomb Mountains.

K. Utilities and Services

As noted throughout this document, all the major public services and utilities were developed at the town of Eagle Mountain by Kaiser to support the mine workers. Since the mine is now closed, most of the single-family residences are unoccupied, and the supporting commercial and institutional facilities are no longer in operation. Prior to the mine closure, approximately 3,700 persons lived at Eagle Mountain (Kaiser Steel Corporation 1978:6). In 1978 there were 416 permanent residences, 185 trailers, 450 dormitories, and supporting commercial facilities (Kaiser Steel Corporation 1978:6). As late as 1980, census data indicated that there were 579 dwelling units and a population of 1,859 at Eagle Mountain.

This infrastructure is still in place. The town of Eagle Mountain is occupied by Kaiser Steel Resources office facilities and the return-to-custody facility. Expansion of the RTCF was approved by the County of Riverside in May 1989 to allow a maximum of 500 residents. The facility currently houses 271 inmates. In June 1990 there were approximately 160 people living in 55 residential dwelling units at the town of Eagle Mountain.

From a public services standpoint, the affected environment would also include the surrounding communities of Desert Center and Lake Tamarisk, which are located southeast of the project site. The Lake Tamarisk development consists of about 70 privately owned single-family homes, two recreational lakes, a nine- hole golf course, a 150-space recreational vehicle park, and about 150 undeveloped lots owned by Kaiser Steel. Desert Center, at the junction of Interstate 10 and State Route 177, has a population of approximately 27 and has 13 single-family residences and several businesses. Commercial services in the area are found primarily in Desert Center. These services are discussed in detail below.

1. Water and Sewer

Prior to the early 1980s, well water was used by Kaiser Steel for domestic purposes at the town of Eagle Mountain. Since that time however, the State Department of Health Services determined that the aquifer contains fluoride levels which exceed allowable state drinking water standards. At Eagle Mountain, groundwater continues to be used for industrial and domestic uses, but all drinking water is provided by tanker truck or in bottles. Lake Tamarisk has a plant which treats the water for fluoride removal.

Sanitary sewer service is available at Eagle Mountain in sewage disposal ponds located just south of the town. This treatment facility is designed to discharge up to 180,000 gallons per day, although its permitted discharge by the Lower Colorado River RWQCB is less, 40,000 gallons per day. This facility served the residents associated with the Kaiser iron ore mining operation prior to the closure of the mine. Lake Tamarisk also has a small treatment facility. Sewage treatment at Desert Center is via septic systems.

2. Fire, Police, and Emergency Medical Services

The Kaiser Steel fire station existed at Eagle Mountain to provide service to the town and the Kaiser mining operation. The station is not currently manned, but will be renovated and manned (two persons) by the County of Riverside to provide service to the RTCF at Eagle Mountain. A Riverside County fire station (Station 49) exists at Lake Tamarisk. This station is regularly manned by two people and supported by a volunteer company (Shay, Riverside County Fire Department, 12/15/89). The next nearest fire engine (required for a "first alarm" assignment) would respond from Mecca or Blythe. Both engines are more than 30 minutes distant in response time.

The existing water system for fire protection at Eagle Mountain is currently considered inadequate by the fire department (Regis, Riverside County Fire Department, 5/31/90). The fire department presently has a "hold" on the occupancy of any additional dwelling units within the community of Eagle Mountain primarily due to the deficiencies of the water system. Those deficiencies are due to the insufficient flows and pressures from the hydrants and inadequate access to the hydrants. The water system that serves the employee housing for MRC is currently being improved. The water system that serves the RTCF is being improved as required for their expansion.

Police service is provided to the project site and surrounding area by the Riverside County Sheriff Department from the Indio station. Eagle Mountain is not routinely patrolled, and the response time is approximately 30 to 45 minutes (Doyle, Riverside County Sheriff, 8/23/89).

Ambulance service for the area is provided through the Riverside County fire station at Lake Tamarisk. Fire personnel with emergency medical technician (EMT) I training provide ambulance service to the area. Paramedic and critical emergency service requiring air support (helicopter) is provided from Indio or Riverside.

3. Utilities

a. Electricity

The project site and surrounding area in Riverside County is within the service territory of Southern California Edison (SCE). The electricity distribution system (substation and lines) for Eagle Mountain is intact. Major transmission lines exist along Interstate 10 and southeast of Eagle Mountain.

b. Natural Gas

Natural gas main lines exist along Kaiser Road, and larger gas pipelines are located along Interstate 10 and also run southwest/northeast from Desert Center. Natural gas service is provided to Eagle Mountain and the project area by Southern California Gas Company.

c. Telephone

Telephone service is provided by General Telephone and telephone lines exist for Eagle Mountain, Lake Tamarisk, and Desert Center.

4. Community Facilities

a. Schools

The three schools at the town of Eagle Mountain are within the Eagle Mountain Unified School District. Elementary and junior and senior high schools exist at Eagle Mountain. While the mining operation was under way, the district had approximately 1,000 students (Truitt, Desert Center Unified School District, 12/18/89). In 1989, there were approximately 90 students in grades K–8 using the buildings at the high school. High school students (30 students) are bused to Blythe. The elementary school and middle schools at Eagle Mountain are not currently being used.

b. Parks and Recreation

Community recreational opportunities exist at Lake Tamarisk (two lakes, recreation center, and a nine-hole golf course). The two lakes are used for recreational boating and fishing. At Eagle Mountain, indoor recreation facilities exist at the RTCF and will also be part of the proposed expansion of that facility.

c. Libraries

A Riverside County branch library exists at Lake Tamarisk and is staffed by one clerk half-time. The library is currently underutilized and number of volumes per capita far exceeds the County of Riverside standard (Auth, City of Riverside Library, 12/19/89).

d. Solid Waste Disposal

A Riverside County sanitary disposal site for solid waste exists west of Kaiser Road between Desert Center and Eagle Mountain and serves Eagle Mountain, Lake Tamarisk, and Desert Center.

L. Noise

The following discussion is based on the noise technical study prepared for RECON by Mestre Greve Associates, Newport Beach, California, in February, 1990. The noise technical study is included with this report as Appendix H. The existing noise environment was determined through a comprehensive noise measurement survey and computer modeling effort. Existing noise levels were established along both the proposed rail routes to the project site and on roadways in the vicinity of the project site.

Several noise rating scales have been developed for describing the effects of noise on people and for evaluating the significance of those effects. The scale used in the noise technical study is the Community Noise Equivalent Level (CNEL). CNEL represents a time-weighted 24-hour average noise level based on the A-weighted decibel (dBA). "A" weighting equates noise to the frequency response of the human ear. Time weighting involves the penalization of noise during certain sensitive time periods. The CNEL scale penalizes the evening time period (7 P.M. to 10 P.M.) noise by 5 dBA and the nighttime period (10 P.M. to 7 A.M.) noise by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods.

Riverside County does not have a noise ordinance that would apply to this project. However, the California Department of Health has established guidelines for assessing the compatibility of community noise environments and land uses in terms of CNEL. The guidelines rank noise and land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. These guidelines are summarized in Figure 76. Sixty and 65 dBA CNEL are the highest threshold noise levels considered normally acceptable for the most noise-sensitive land uses, single- and multi-family residences, respectively.

The State of California Department of Health Services model noise ordinance, contained in Table 16, establishes exterior noise standards. The ordinance is designed to protect residential areas from stationary noise sources on private properties. The model noise ordinance requirements cannot be applied to mobile noise sources, such as when traveling on public roadways. Control of the mobile noise sources on public roads is preempted by federal and state laws. The noise ordinance also does not apply to motor vehicles on private property.

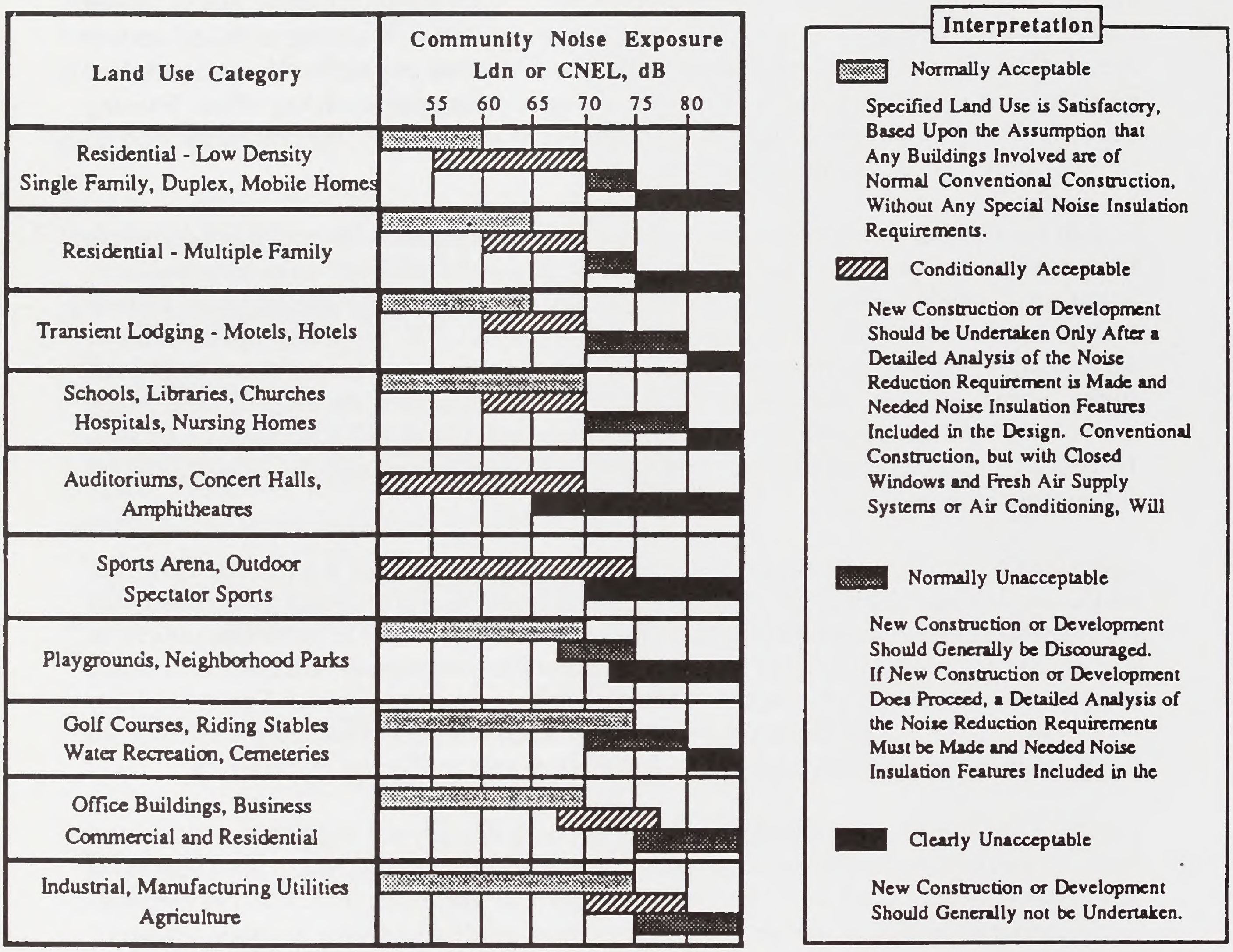


FIGURE 76 . CALIFORNIA LAND USE COMPATIBILITY STUDIES

TABLE 16
MODEL NOISE ORDINANCE STANDARDS

Maximum Time of Exposure	Noise Metric*	Noise Level Not to Be Exceeded	
		7 A.M.–10 P.M.	10 P.M.–7 A.M.
30 minutes/hour	L50	50 dBA	45 dBA
15 minutes/hour	L25	55 dBA	50 dBA
5 minutes/hour	L8.3	60 dBA	55 dBA
1 minute/hour	L1.7	65 dBA	60 dBA

*L(*x*) = noise level exceeded *x* percent of the time.

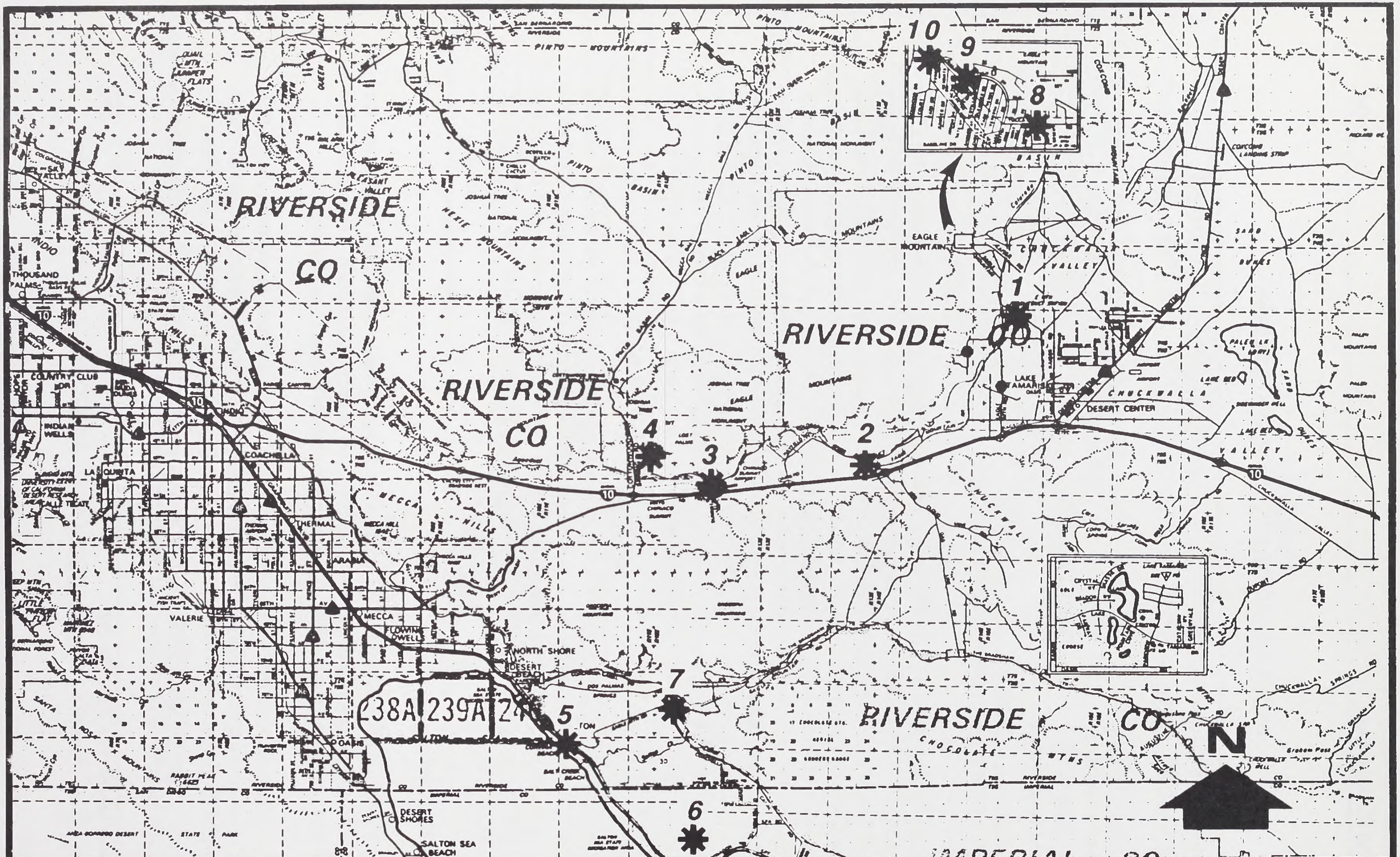
Measurements of ambient noise levels were taken at the approximate elevation of five feet above the ground at 10 different locations on December 13 and 14, 1989. The 10 locations are depicted in Figure 77. Measurements were conducted between 10 A.M. and 6 P.M. for a minimum duration of 15 minutes per site. Table 17 shows the results of the noise measurement survey. The quantities measured were the equivalent noise level (L_{eq}), the maximum noise level (L_{max}), and the percent noise levels (L%). Percent noise levels are another method of characterizing ambient noise where, for example, L90 is the noise level exceeded 90 percent of the time, L50 is the noise level exceeded 50 percent of the time, and L10 is the noise level exceeded 10 percent of the time. L90 represents the background noise level, L50 represents the average noise level, and L10 represents the dominant noise level. L_{max} represents the maximum noise level.

As shown in Table 17, existing ambient noise levels in the vicinity of the project site are generally low. These noise levels are a result of traffic noise on I-10 and arterial roadways, aircraft flyovers, and background noise. Sites 2 and 3 experienced moderate noise levels, but their proximity to roadways caused traffic noise to increase the otherwise low ambient noise levels at these sites.

a. Rail Routes

For site access, the project would utilize the 52-mile Eagle Mountain railroad, connecting the project site with the Southern Pacific main railway line at Ferrum Junction. The last train to use this rail segment occurred in 1986 and hence the ambient noise is extremely low.

Ninety-four miles of Southern Pacific rail line would connect Ferrum Junction to the Colton Yard/San Bernardino transfer station. This rail segment is of primary interest because all trains destined for the Eagle Mountain landfill would use these rail lines to access the site. From the Colton Yard/San Bernardino station to locales within San Bernardino, Riverside, and Los Angeles counties, several alternative rail routes could be taken.



SOURCE:MESTRE-GREVE ASSOCIATES 1990

FIGURE 77. NOISE MEASUREMENT LOCATIONS

RECON

TABLE 17
RESULTS OF NOISE MEASUREMENT SURVEY

Site	Location	L_{eq}	L_{max}	L10	L50	L90
1	Off Eagle Mtn. Rd. south of site	45.9	47.6	46.6	45.6	45.1
2	Eagle Mtn. RR crosses I-10	62.7	77.3	66.1	57.1	46.8
3	Chiriaco Rd. north of I-10	58.3	68.8	62.1	56.1	51.1
4	Cottonwood Spring Rd. north of I-10	56.4	81.7	46.6	30.1	26.6
5	Corvina Beach	54.2	72.2	57.6	41.6	31.1
6	North of Bombay Beach	34.2	38.0	36.6	33.6	30.6
7	Eagle Mtn. RR at Coachella Canal Rd.	27.2	38.2	30.1	24.1	21.6
8	1/4 mile north of Eagle Mtn. Jr. & Sr. High School	58.5	82.9	45.6	35.1	32.6
9	Express Way at Yucca	47.9	66.1	40.6	32.6	30.6
10	Corner of Yucca & Palm	49.4	68.1	40.1	35.6	32.2

South of I-10, the Southern Pacific railroad runs parallel to State Highway 111. Noise measurements conducted February, 1990, at Corvina Beach adjacent to the railroad recorded a peak noise level from a train operation of 73.7 dBA. In addition to this location, train noise measurements were made 50 feet from the Southern Pacific railroad at the Whitewater preserve between Indian Avenue and Gene Autry Trail on May 3, 1989. This location is approximately 70 miles west of the proposed Eagle Mountain landfill site (project site) and approximately 50 track miles northwest of the Corvina Beach station. The results of these noise recordings are shown in Table 18.

Existing CNEL were established by computer modeling the Southern Pacific railroad for existing operations using the Wyle Laboratories model for assessment of train noise (Wyle Laboratories 1973). Data on railroad operations were obtained from a Southern Pacific representative. The railroad line is used only for freight train operations, with 40 train pass-bys (with an average of 65 cars per train) comprising a typical day. Of the 40 train pass-bys, 5 occur during the evening hours and 4 occur during the nighttime hours. A speed of 50 miles per hour is considered typical for the train pass-bys.

These data were utilized in conjunction with the Wyle model to determine Southern Pacific train noise levels at various distances from the tracks. The results are shown in Table 19. These projections do not include influences of topography or barriers which might reduce the noise levels.

TABLE 19
EXISTING RAILROAD NOISE LEVELS

Distance (feet)	100	200	300	400	500	700	1,000	2,000	5,000
CNEL (dBA)	74	70	67	64	62	60	57	51	44

As depicted above, existing train pass-bys on the Southern Pacific rail line can reach high maximum noise levels (greater than 75 dBA) at a distance of 50 feet. Existing residential uses within roughly 350 feet of the railroad are currently exposed to noise levels greater than 65 dBA CNEL.

The Eagle Mountain railroad is currently not in use. Location 7 of the noise measurement survey (see Figure 77 and Table 17) provides existing noise levels adjacent to the rail line. Ambient noise levels at this location are below 40 decibels.

b. Roadways

The existing traffic noise levels in the vicinity of the project were established in terms of the CNEL index by modeling the roadways for the current traffic and speed characteristics. The

TABLE 18
WHITEWATER PRESERVE TRAIN MEASUREMENT RESULTS
(50 feet from track)

Time	Direction	Maximum dBA	$L_{eq}(10)$ dBA	Duration (seconds)
12:06 p.m.	East	85	71	82
1:49 p.m.	East	95	79	133
2:42 p.m.	West	90	77	131
4:03 p.m.	East	89	73	48
5:01 p.m.	East	90	72	142
			(Peak 10 min.)	

roadways that were modeled for existing conditions were the roadways near to the project site and those that might carry project-generated traffic.

The roadway noise levels were computed using the Federal Highway Administration's Highway Traffic Noise Prediction Model (FHWA 1978). The FHWA model takes into account traffic volume, vehicle mix, vehicle speed, and roadway geometry. Traffic data for Eagle Mountain Road and Kaiser Road, in the immediate vicinity of the project site, were derived from the DKS traffic study (Appendix D of this draft EIS/EIR). For these arterial roadways, the traffic mix of 97 percent automobiles, 2 percent medium trucks, and 1 percent heavy trucks was based on vehicle mix measurements for similar roadways in southern California. The computer-iterated distances to the 60, 65, and 70 CNEL contours for Eagle Mountain and Kaiser roads are provided in Table 20. Also shown in Table 20 are the I-10 distances to specified CNEL. The existing I-10 traffic volume of 12,200 vehicles per day and vehicle speed of 55 MPH were obtained from the DKS traffic study. The traffic mix for I-10 was obtained from Caltrans.

The roadway traffic noise projections shown above do not take into account any barriers, topography, or buildings that may reduce noise levels and, as such, are considered "worst case." Existing noise levels adjacent to Eagle Mountain Road and Kaiser Road are compatible with surrounding land uses. Noise emanating from Eagle Mountain and Kaiser roads does not exceed 60 dBA CNEL much beyond the edge of the roadway. I-10 is the major noise source in the area; the 70 dBA CNEL reaches a distance of 148 feet from the roadway edge, the 65 dBA CNEL reaches a distance of 319 feet from the roadway edge, and the 60 dBA CNEL reaches a distance of 687 feet from the roadway edge. Existing residences within 687 feet of I-10 may experience adverse noise levels if grade separations or other factors do not act to reduce the existing freeway noise.

TABLE 20
EXISTING ROADWAY NOISE LEVELS

Roadway	Distance to CNEL Contour (Feet)		
	70 CNEL	65 CNEL	60 CNEL
Eagle Mountain Road			
I-10 eastbound to I-10 westbound	RW	RW	RW
I-10 westbound to Ragsdale Road	RW	RW	RW
North of Ragsdale Road	RW	RW	RW
Kaiser Road			
I-10 westbound to Ragsdale Road	RW	20	43
Ragsdale Road to Lake Tamarisk Drive	RW	RW	14
North of Lake Tamarisk Drive	RW	RW	RW
Interstate 10			
Eagle Mountain Road to Kaiser Road	148	319	687

RW - Denotes that the CNEL contour does not extend beyond the roadway edge.

M. Cultural Resources

The prehistory of the Eagle Mountain area is largely unknown. Investigations conducted elsewhere in the California desert suggest that aboriginal populations came to the region during the cool, moist conditions which prevailed at the end of the Pleistocene era, circa 12,000 years ago (Moratto 1984). Exploiting the lake resources which existed at that time, these peoples left cultural remains which imply a variant of the Big Game Hunting Tradition, which is marked by the appearances of fluted projectile points across the middle of the continent. Apparently, this tradition was succeeded by one with a generalized hunting bias, the Western Pluvial Lakes Tradition (Bedwell 1970).

As conditions became dryer and warmer, the prehistoric inhabitants of the California desert adapted their life-styles accordingly. Seed processing became a part of their technology, followed by incipient agriculture. Hunting remained important, and cultural differences are reflected in artifact assemblages throughout what is termed the Late Cultural Sequence (Moratto 1984). This includes the Pinto period (7000–4000 before the present [B.P.]), the Gypsum period (4000–1500 B.P.), the Saratoga Springs period (1500–800 B.P.), and the Protohistoric period (800 B.P. until the Historic period) (Moratto 1984). Pottery appeared approximately 1,000 years ago. Available evidence supports the contention that the peoples of the California desert employed varying strategies to deal with the increasingly arid conditions. For the Protohistoric period, there is archaeological evidence that some desert peoples inhabited village locales on a year-round basis (Schaefer et al. 1987). Settlement systems were highly dependent on permanent sources of water and relied on food resources from the mountain foothills to the Colorado River. Temporary campsites are better documented in the archaeological literature (Schaefer 1985, 1988) and identification of the resource and settlement strategies employed is a current topic of archaeological research.

The first Europeans to enter the Colorado Desert encountered a stable population well adapted to the arid surroundings. At the time of contact with Europeans, five identifiable Native American groups had interest in the lower California desert. These groups, whose spheres of influence overlapped somewhat, were the Serrano in the northwest, the Chemehuevi in the northeast, and the Cahuilla to the south and west. Along the Colorado River, the Mojave and Halchidoma held sway.

European intrusion into the California desert begins with the travels of a solitary Spanish priest, Father Garces. Traveling without European companions and befriended by the Native Americans, he traveled from the junction of the Colorado and Gila rivers through the desert to the San Gorgonio Pass and then on to Mission San Gabriel. After his initial foray, he led Captain de Anza and a party of some 200 people along a similar route in 1775. Spanish interest in the California desert was limited to its value as a transportation and communication route, and this limited involvement continued under Mexican rule, which commenced in 1821 and ended in 1848 with the treaty of Guadelupe-Hidalgo. By the early 1850s, the search for mineral

wealth and the desire to exploit the then largely unused supply of water in the Colorado River led to increased travel in the region, but settlement was still thin and widely scattered, concentrated as always around reliable water supplies.

The unintended diversion of the Colorado River resulted in filling the Salton Sea basin between 1905–1915, creating a large freshwater lake in the desert. Water exploitation schemes allowed a substantial agricultural expansion, and the valleys surrounding the California desert became centers of agricultural production. With no natural exit, evaporation and influx of leached salts from adjacent farmlands have led to increased salinity, causing the brackish conditions which exist in the Salton Sea today.

Three major undertakings affected the region during the 1930s and 1940s. The first of these, the Los Angeles Aqueduct, resulted in the temporary housing of several thousand workers in the area adjacent to Hayfield Spring. Remnants of their camps are still extant. The second, the California-Arizona Maneuver Area, developed as a desert warfare training center during World War II, is also still recognizable. Lastly came the development of the iron deposits in the Eagle Mountains and the building of the Eagle Mountain rail line.

There are two potential Native American issues. The first is that the Eagle Mountains may have been a traditional location for Native American tribes such as the Mojave, Chemehuevi, and Cahuilla to hunt mountain sheep and deer. The second is that the Eagle Mountains may have sacred or special historical significance to Native Americans. Dr. Lowell J. Bean was retained to develop an accurate and comprehensive assessment of these issues. He and his staff contacted eight Indian reservations whose tribal traditional territory included the Eagle Mountains and Lower Colorado Desert. They described the project to interested members, and arranged a visit to the mine area. Five of the reservations expressed initial interest in the visit, but only three actually participated: representing the Chemehuevi, Mojave, and Cahuilla tribes. No special significance was attached to the Eagle Mountains by any of Dr. Bean's respondents. His report, included as Attachment 3 of Appendix I, discusses this lack of significance of the Eagle Mountains to the present-day Native Americans and addresses the Native American's feelings concerning the effects of the project on their ancestral lands.

1. Eagle Mountain Iron Mine Including BLM Exchange Lands

The Eagle Mountain Mine property (the Specific Plan Area) was surveyed by a team of archaeologists between October 30 and November 15, 1989, and in February and March, 1991. The survey team examined undisturbed areas within the project boundaries, attempting to identify any historic or prehistoric cultural material. The Eagle Mountain Mine area has been badly disturbed as a result of mining activities. The disturbance is so pervasive that any cultural resources which may have existed on this portion of the property have been either carried away

with ore or covered by tailings piles, which in some instances are hundreds of feet thick. No cultural resources were discovered either within the Eagle Mountain Mine area or within the BLM exchange lands area.

2. Road and Rail Ways

The terrain within the railroad improvement areas is essentially level. Original construction of the roadbeds entailed scraping away the natural soil for at least 20 meters on either side of the edge of the rail line.

Only one locus of cultural activity was located. This area has been recorded with the regional information clearinghouse at the University of California, Riverside, and assigned California trinomial identifier Riv-3798. One additional previously recorded site, Riv-3216, was not relocated within the survey boundaries.

3. Kaiser Exchange Lands

The parcels of land along the rail right-of-way which are proposed to be transferred to BLM jurisdiction, are, with the exception of nine isolated artifacts, devoid of evidence of prehistoric activity. Three of the nine isolates are individual flakes found in the surveyed portion of Sec. 21, T. 6 S., R. 14 E., about three miles south of Interstate 10. Four isolated flakes were found within Sec. 8, T. 6 S., R. 14 E.; Sec. 13, T. 7 S., R. 13 E.; Sec. 22, T. 13 S., R. 11 E.; and Sec. 33, T. 6 S., R. 14 E. A single flake was found in Sec. 20, T. 8 S., R. 11 E. The remaining isolated artifact is a single sherd of Native American pottery, in a wash descending from Difficult Canyon (Sec. 27, T. 5 S., R. 14 E.). These isolated artifacts have been recorded with the clearinghouse at the Archaeological Research Unit, University of California Riverside. Section 27 also contains a trash scatter of possible pre-1940 origin. It is located some 30 meters northeast of the site where the sherd was found, on the margin of the same wash. Three bottle fragments of purple glass were found in Section 27 just south of the railroad. No other cultural materials other than obviously modern litter were located on any of the other exchange parcels.

N. Paleontology

The following discussion is a summary of the Eagle Mountain landfill paleontologic assessment conducted by the San Bernardino County Museum in December 1989 and located in Appendix J of this EIS/EIR. It includes a review of pertinent published and unpublished geologic and paleontologic literature, institutional site records checks, and field survey of those areas defined by the literature and records searches as having the potential to contain paleontologically sensitive sediments which could be affected by project development.

The area under assessment consists of two distinct geologic and geographic areas: the area north of I-10 and the area south of I-10.

1. North of Interstate 10

The project in this area includes the proposed disposal site at the Eagle Mountain Mine, the BLM lands to be exchanged with Kaiser Steel Resources, Inc. lands, the truck access by Eagle Mountain Road and its proposed extension, and approximately 12 miles of the Eagle Mountain rail line, all of which lie north of I-10 as it runs east-west between Chiriaco Summit and Desert Center. The following rock types occur at the site and along the rights-of-way.

Gneissic rocks are of high metamorphic grade and have been subject to severe deformation. These rocks may range in age from Proterozoic to early Mesozoic. However, recrystallization involved in their formation precludes preservation of fossils.

Granitic rocks are late Mesozoic in age and because of their intrusive nature are in part responsible for the deformation of the metamorphic rocks listed above. Their mode of emplacement and crystallization precludes preservation of fossils.

Volcanic rocks north of I-10 may be early to middle Miocene in age, circa 20 million years, assuming that they are from the same volcanic event that took place in the Orocopia Mountains. The volcanic rock is not associated with sediments or volcaniclastic debris flows, and consequently, they have a low potential to contain vertebrate fossils. The proposed rights-of-way will not cross the Tertiary volcanic rocks.

Pleistocene alluvium occurs as dissected fanglomerates and terraces within the project area. These are expected to contain coarse, angular rocks near their source and grade into finer sediments away from their source. The potential for vertebrate fossils in these sediments would increase away from the source as sediment clast size became finer and as sediments became stable and developed soil horizons.

Recent alluvium is located in valleys and in wash bottoms between outcrops of the above rock types. These recent, active sediments have low potential to produce paleontologic resources.

2. South of Interstate 10

The Eagle Mountain rail line south of I-10 runs from the Chuckwalla Valley across the Chuckwalla Bench to Chuckwalla Summit. It then parallels Salt Creek as it runs south of the Orocopia Mountains and north of the Chocolate Mountains. The Coachella branch of the All American Canal is near the elevation of the high shoreline of ancient Lake Cahuilla. Near this point, the Eagle Mountain rail line is north of Salt Creek and runs southwesterly to its terminus at Ferrum Junction, on Highway 111 on the east side of the Salton Sea. The Eagle Mountain rail line and Kaiser Steel Resources lands to be exchanged to BLM lie within the following geologic sections south of I-10 to Ferrum Junction on Highway 111.

Gneissic rocks of high metamorphic grade in the eastern Orocopia Mountains, western Chuckwalla Mountains, and western Chocolate Mountains may be older than 500 million years. The high grade of crystallization and severe deformation precludes preservation of fossils.

Orocopia Schist in the south and western Orocopia Mountains is now considered to be Mesozoic in age. The Orocopia Schist figures prominently in discussions of amount of offset along the San Andreas fault. The high degree of crystallization and deformation precludes preservation of fossils.

Granitic rocks span a period of time that includes the late Mesozoic. Their mode of emplacement and crystallization precludes preservation of vertebrate fossils.

The Maniobra Formation of Eocene age contains an important assemblage of invertebrate fossils which includes four gastropods and two pelecypods. The Maniobra Formation plays an important part in discussions of offset along the San Andreas fault. The Maniobra Formation has the potential to contain vertebrate fossils. The Eagle Mountain rail line right-of-way and access roads will not come into contact with the Maniobra Formation.

The Diligencia Formation is now considered to include the Late Arikareean land mammal age of the early Miocene. The vertebrate fossils provide age control for the continental sediments of the Diligencia Formation which figures prominently in the discussions of offset distances and rates along the San Andreas fault. The fossil localities are approximately two-thirds of a mile distant from the Eagle Mountain rail line right-of-way and the formation itself is not encountered by the railroad right-of-way.

Tertiary volcanics interfinger the early Miocene Diligencia Formation and are mapped as being in the upper Diligencia or overlying the Diligencia Formation within the Orocopia Mountains. To the southeast, in the Chocolate Mountains, tertiary volcanics are mapped as sitting within

or on top of Pliocene or Pleistocene fluviatile sediments on the northeast side of the San Andreas fault. The volcanic rocks may provide datable horizons within the sedimentary units between early Miocene and late Pliocene times. These volcanic units south of I-10 are generally associated with sedimentary units which have potential to contain vertebrate fossils. The Eagle Mountain rail line will not directly cross Tertiary volcanic rocks but is cut into sedimentary units which may interfinger with these volcanic sediments.

Pleistocene old alluvium. Fluviatile sediments include coarse fanglomerates and fine-grained fluviatile sediments which occur along the Eagle Mountain rail line right-of-way. These fluviatile sediments are coarse near their source and grade to finer sediments with soil horizons near the valley centers. In the northern Chocolate Mountains and in the western Chuckwalla Mountains, geologic mapping has distinguished older Pleistocene alluvial deposits from Pleistocene alluvium. Field relationships suggest that the latter is younger than the former. The field assessment determined that the Eagle Mountain rail line runs through moderately coarse to fine fluviatile sediments with several very well developed red loamy soil horizons. These are probably equivalent in age and may be distal depositional equivalents to the Pleistocene old alluvium mapped to the south and east. The Pleistocene old alluvium along the railroad right-of-way is distinguished from younger Pleistocene alluvium by deep weathering and because it may be somewhat deformed and may contain fault offsets that are not seen in the younger Pleistocene alluvium. Fine-grained portions of the Pleistocene old alluvium and the soil horizons have potential to contain paleontologic resources. Although no vertebrate fossils were located during the field survey, soil horizons have been shown to be relatively fossiliferous compared to coarse fluviatile deposits. The potential for paleontologic resources was reinforced during the field assessment when calichified casts of roots were located in the red soil horizons. The Pleistocene old alluvium along the Eagle Mountain rail line has potential to produce nonrenewable paleontologic resources. These resources may be impacted by excavation related to railroad rehabilitation and maintenance.

Pleistocene alluvium. Pleistocene fanglomerates and fluviatile sediments are mapped as occurring along the Eagle Mountain rail line right-of-way. These sediments may sit unconformably upon the Pleistocene old alluvium. Along the railroad, these sediments are very coarse and consequently have a low potential to contain nonrenewable paleontologic resources.

Pleistocene lacustrine sediments and interbedded fluviatile deposits are found above the high shoreline of Lake Cahuilla westward to the current shoreline of the Salton Sea. These in part are covered by a thin veneer of sediments from Holocene Lake Cahuilla and deltaic sediments from the Colorado River. However, downcutting wave action of Lake Cahuilla has exposed the Pleistocene lacustrine sediments over a broad area. The older sediments show deformation near the trace of the San Andreas fault. North of Bombay Beach at Salt Springs, these older lake sediments are nearly vertical and contain the Bishop Tuff, dated at 740,000 B.P. Lacustrine sediments of the Borrego Formation, named from deposits on the west side of the Salton Sea, may be correlative with these older Quaternary lake sediments. These older Pleistocene lake

sediments are flat-lying or deformed, depending on their proximity to the San Andreas fault. Therefore, a broad range of time may be represented by these vertical sediments near the fault branches and those flat-lying sediments that are relatively undeformed. Their ages may range from middle Pleistocene at Bombay Beach, where the Bishop Tuff is exposed, to less than 35,000 B.P. North of Wister, the flat- lying sediments contain an articulated limb of a Pleistocene horse. Review of the Regional Paleontologic Locality Inventory at the San Bernardino County Museum identified many resource localities in the vicinity of the Eagle Mountain rail line where sediments are exposed west of the Coachella Canal to the margin of the Salton Sea (see Appendix J:15-16).

The field survey along the Eagle Mountain rail line reinforces the fossiliferous nature of the sediments between the Coachella Canal and Highway 111. See Appendix J, pages 16-17, for locations.

Pleistocene lacustrine sediments along the Eagle Mountain rail line west of the Coachella Canal and the terminus of the railroad at Ferrum Junction have potential to contain nonrenewable paleontologic resources.

Recent alluvial sediments occur on slopes covering the above-mentioned areas as well as in active washes located centrally in valleys. These recently active sediments have low potential to contain paleontologic resources.

Sedimentary rocks with high potential to contain nonrenewable paleontologic resources occur at the I-10 junction with Eagle Mountain Road and south of I-10 in several sedimentary units along the Eagle Mountain rail line.

O. Energy Consumption/Generation

1. Fossil Fuels

Consumption of fossil fuels during solid waste disposal activities results from the following:

a. Refuse collection.

b. Transport to intermediate handling/processing facilities via direct haul in refuse collection vehicles and the ultimate disposal site by truck or rail.

c. Refuse processing and transfer.

d. Disposal operations at the landfill (refuse compaction, soil cover placement, and grading).

The proposed Eagle Mountain landfill will receive up to 16,000 tpd by rail and up to 4,000 tpd by truck of refuse from an area that may include portions of Los Angeles, Orange, San Bernardino, and Riverside counties as well as other wastesheds. Because there are no current published estimates of the fuel consumption associated with refuse transport and disposal activities in these areas, the following assumptions were made by SCS Engineers forming the basis for this draft EIS/EIR energy consumption/generation analysis:

a. Fuel consumption on collection routes, such as from individual residential, commercial, and industrial accounts, will be the same regardless of whether the wastes are landfilled locally or at a remote desert site. Therefore, no attempt has been made to quantify fuel use associated with existing refuse collection activities.

b. In the above wasteshed area, approximately 85 percent of the collected wastes are hauled directly to local landfill sites in refuse packer trucks (those vehicle used for trash collection which hydraulically compact the refuse as it is picked up). The remaining wastes are first processed through transfer stations and then hauled to landfills in truck/trailer rigs.

c. Direct haul in packer trucks is economical at a one-way distance of 15 miles or less from the collection route to the landfill.

d. The typical haul distance for packer trucks from a collection route to a transfer station is 10 miles one way.

e. The typical haul distance for transfer vehicles to existing landfills is 40 miles one way.

f. The average capacity of the major municipal landfills in the Los Angeles area is 5,000 tpd. To accommodate 20,000 tpd refuse input, four such sites would be required. This assumption has been used to estimate landfill equipment requirements.

g. Fuel use associated with support vehicles and smaller landfill or transfer station equipment is negligible.

A summary of the above assumptions and the types of equipment needed for transport, transfer, and landfill disposal of 16,000 tpd by rail and 4,000 tpd by truck of refuse to four 5,000 tpd capacity landfill sites is shown in Table 21. Corresponding estimates of fuel consumption for these activities are shown in Tables 22 and 23. Tables 22 and 23 also contain information on equivalent energy consumption in terms of million British thermal units (MMBtu). This information is presented for comparison with the energy consumption/production associated with the Eagle Mountain project.

Based on these assumptions and manufacturers' information on fuel consumption, it is estimated that the transport, processing, and disposal of 16,000 tpd by rail and 4,000 tpd by truck of refuse to four 5,000 tpd-capacity landfill sites would consume the following quantities of diesel fuel:

Refuse transport	11,100 gallons
Refuse handling and disposal	5,300 gallons
Total	16,400 gallons

This total corresponds to 0.82 gallon of fuel consumed per ton of refuse disposed.

2. Utilities Serving the Project Area

a. Electricity

The project site and surrounding area in Riverside County is within the service territory of Southern California Edison. The electricity distribution system (substation and lines) for Eagle Mountain is intact. Major transmission lines exist along Interstate 10 and southeast of Eagle Mountain. A residential unit can be expected to consume approximately 600 kilowatts per month according to SCE (1986).

b. Natural Gas

Natural gas main lines exist along Kaiser Road, and larger gas pipelines are located along Interstate 10 and also run southwest/northeast from Desert Center. Natural gas service is provided to Eagle Mountain and the project area by Southern California Gas Company. A residential unit can be expected to consume approximately 45 therms per month (SCE 1986).

TABLE 21
SUMMARY OF VEHICLES AND EQUIPMENT REQUIRED FOR TRANSPORT AND DISPOSAL OF 20,000 TPD OF REFUSE (EXISTING CONDITIONS)

Transportation

- 20,000 tpd of refuse generated and transported to four 5,000-tpd-capacity landfill sites.
- 85 percent of refuse generated (17,000 tpd) hauled directly to landfill in 8-ton-capacity packer trucks. Round trip haul distance is 30 miles.
- 15 percent of refuse generated (3,000 tpd) hauled in 8-ton-capacity packer trucks to transfer station. Round trip haul distance is 20 miles.
- 3,000 tpd of refuse transported to landfill sites in 22-ton-capacity transfer/trailer rigs. Round trip haul distance is 80 miles.

Transfer Operations

- Equipment for 3,000-tpd equivalent transfer station includes three 200-horsepower (hp) rubber-tired loaders. Refuse dumped directly into open-top trailers (i.e., no compaction equipment). Equipment operates 10 hours per day.

Landfill Disposal

- Landfill equipment for 5,000-tpd site (operating 10 hours per day):

  - 335-hp crawler tractors: 4
  - 650-hp off-highway scrapers: 2
  - 275-hp motor graders: 2
  - 310-hp refuse compactors: 2
  - 350-hp water truck: 1
  - 200-hp utility truck: 1

TABLE 22
FUEL CONSUMPTION FROM
TRANSPORTATION OF WASTES TO EXISTING FACILITIES

Project Phase	Vehicle Type	No. of Vehicles	Miles/day per Vehicle	Average Speed (MPH)	Diesel Fuel Use Miles/gal	Diesel Fuel Use Gal/day	Equivalent Energy Consumption (MMBtu/day)
Refuse delivery to landfill	Refuse packer*	1,065	60	25	8.0	7,988	1,030
Refuse delivery to transfer station	Refuse packer§	188	40	25	8.0	940	121
Transfer station	Transfer truck/trailer#	45	240	45	5.0	2,160	279
TOTAL						11,088	1,430
Total Fuel Consumption, gallons/ton refuse						0.55	
Total Energy Consumption, Btu/ton refuse							71,504

*Transportation from collection route to landfill. Excludes on-route fuel consumption.
§Transportation from collection route to transfer station. Excludes on-route fuel consumption.
#Transportation to landfill from transfer station.

TABLE 23
FUEL CONSUMPTION FROM
EXISTING DISPOSAL OPERATIONS (20,000 TPD)

Project Phase	Vehicle Type	No. of Vehicles	Hours/day	Diesel Fuel Use Gal/veh-hr	Diesel Fuel Use Gal/hr	Diesel Fuel Use Gal/day	Equivalent Energy Consumption MMBtu/hr	Equivalent Energy Consumption MMBtu/day
Transfer station	Rubber-tired loader	8	10	6	18	180	2.32	23
Working face of landfill	Refuse compactor	8	10	16	128	1,280	16.51	165
	Crawler tractor	16	10	14	224	2,240	28.89	289
Application of daily cover	Crawler tractor	4	10	14	56	560	7.22	72
Dust control and road maintenance	5,000-gal tanker truck	4	10	10	40	400	5.16	52
	Motor grader	8	10	7	56	560	7.22	72
Miscellaneous	Utility truck	4	2	5	20	40	2.58	5
TOTAL						5,260		678
Total Fuel Consumption, gallons/ton refuse							0.26	
Total Energy Consumption, Btu/ton refuse								33,922

NOTE: Excludes transportation by collection vehicles, transfer truck/trailers, or rail. Estimates based on 4,000-5,000 tpd landfills and 1,000-3,000 tpd equivalent transfer station.

IV. Environmental Consequences

This section forms the scientific and analytic basis for the discussion of the environmental impacts of the alternatives including the proposed action. It includes discussions of:

1. Direct effects and their significance.

2. Indirect effects and their significance.

3. Possible conflicts between the proposed action and the objectives of federal, regional, state, and local (and in the case of a reservation, Indian tribe) land use plans, policies, and controls for the area concerned.

4. Energy requirements and conservation potential of various alternatives and mitigation measures.

5. Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

6. Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

7. Means to mitigate adverse environmental impacts.

Direct impacts are normally divided into short- and long-term. Short-term impacts are of short duration and usually caused during the construction phase of the project. The traffic generated by construction vehicles is a short-term impact. The dust created during construction is a short-term impact.

The short-term construction impacts related to the technical areas of air quality, biology, noise, cultural resources, and paleontology are discussed in this draft EIS/EIR. Construction impacts for other areas would not be expected to be significant. These areas include water quality, land use, drainage, growth inducement and socioeconomics, geology and mineral resources, visual resources, utilities, and energy.

A. Water Quality and Use

The land exchange, and railroad and road right-of-way grants would not have any water quality impacts. Therefore, only the landfill operations portion of the proposed action and its alternatives which has the potential for water quality impacts is discussed below.

1. Groundwater Quality/Leachate Production

Assumptions and Assessment Guidelines. Leachate is created when water, regardless of its source, moves through refuse fill and dissolves soluble substances contained in the fill. The potential sources of water for leachate generation include (a) infiltration of direct precipitation and of uncontrolled surface water run-on; (b) the intrinsic moisture content of the refuse; (c) water produced by the microbiological reactions that occur during anaerobic decomposition of the buried refuse; and (d) infiltration of refuse from groundwater. Leachate is typically a solution containing dissolved or finely suspended solid matter, dissolved organic waste, and end products of microbial decomposition. Landfill leachate is basically a wastewater characterized by nonneutral pH, high biological oxygen demand and chemical oxygen demand, and relatively high concentrations of dissolved inorganic substances, possibly including heavy metals. If the capacity of the refuse fill to retain water (field capacity) is exceeded, water may be discharged into adjacent materials. If these materials are sufficiently permeable so that they are capable of transmitting significant quantities of fluids, migration of leachate to groundwater can occur. For any leachate migration to occur, moisture in the landfill must exceed the field capacity of the refuse fill.

Any migration of leachate from the landfill which would result in the degradation of local groundwater would be considered a significant adverse impact.

a. Proposed Action

Impacts

A prerequisite for leachate escape is the presence of free leachate in the landfill. The addition of water to the landfilled refuse from direct precipitation at Eagle Mountain is expected to be minimal, because of the arid climate. The average rainfall is approximately three inches per year. Considerably more moisture will probably be lost from the refuse through evaporation (pan evaporation was measured by Kaiser at approximately 155 inches per year) than is added through direct precipitation, since it is expected that the refuse will be exposed to some drying influence under the layer of daily cover.

In addition, modeling using the Thornthwaite water balance method (Thornthwaite and Mather 1957) indicates that when climatic and soil conditions are taken into account, no moisture is expected to infiltrate the final landfill cover. To determine if free leachate might form in the landfill, the EPA HELP computer model (n.d.) was applied with the assumption that the proposed landfill had been completely filled with refuse but that only 50 percent of final cover had been installed. In a 100-year simulation, the HELP model indicated that no free leachate would accumulate in the landfill.

Uncontrolled run-on to the landfill is also expected to be minimal. Drainage in the area surrounding the landfill will be subject to engineering controls described in the drainage section. These controls are expected to reduce greatly or eliminate run-on.

Accumulation of moisture generated during anaerobic decomposition is expected to be small. Water is normally generated during anaerobic decomposition at very low rates. Microbial decomposition rates are expected to be low as well.

Direct infiltration of groundwater into the refuse fill could, in theory, provide a source of water for leachate generation. Infiltration of groundwater could be expected only if the upper level of groundwater reaches an elevation greater than the lowest level of refuse. This is considered unlikely because refuse will be placed well above the highest historical level achieved by groundwater. The amount of separation will be subject to approval by the RWQCB.

The opportunity for migration of leachate from the landfill results from water content reaching field capacity within the refuse. If leachate were not removed from the landfill, the accumulation of fluids could result in free liquid pooling on the landfill liner. Once the liner becomes saturated and a sufficient fluid head is applied, leachate could move through the liner. Even if this was to occur, the volume of leachate penetration through time is expected to be very low.

If leachate were to escape from the landfill, it would encounter either bedrock or older alluvium. Areas to be filled during the first 60 to 65 years of landfill operation will all overlie bedrock. The intergranular permeability of the bedrock underlying the East Pit is very low, on the order of 1×10^{-9} to 1×10^{-11} cm/sec based on lithology. Extensive fracturing of this type of material, however, may increase the net permeability to the range of 1×10^{-3} to 1×10^{-6} cm/sec.

The lateral distance from the easternmost portion of the fill area eastward to the nearest alluvium is approximately 4,500 feet. Geological mapping of the East Pit areas reveals a general pattern of two major sets of bedrock joints (planar fractures). These trend approximately north-northwest/south-southwest, and east/west. Fractures may control or influence the direction of groundwater flow.

For the purpose of calculating the maximum worst-case expected flow velocity, it was assumed that potential leachate movement will be through bedrock fractures with an effective permeability averaging 1×10^{-3} cm/sec (a high value for rocks of this type). If the groundwater gradient averages 0.01 and the porosity of fractured bedrock is 10 percent, the resulting flow velocity is 1×10^{-4} cm/sec, or about 100 feet per year (30 meters per year). This indicates that groundwater affected by leachate leaking from the portion of the site first filled could move into the alluvium in 45 years (note that these numbers do not take into account the attenuation of pollutant movement which commonly occurs due to absorption and desorption of dissolved

substances on the surface of geologic materials through which groundwater travels; these effects would tend to slow the movement of pollutants).

Based on relative permeabilities, the movement of groundwater is expected to be more rapid in alluvium than in fractured bedrock. Flow rates of 300 feet per year could occur, although the movement of a pollutant plume would be somewhat slower due to the adsorption of pollutants on the surface of sediment grains. Along with adsorption and diffusion, the dilution of leachate-affected water by groundwater already residing in the alluvium would tend to reduce the concentration of pollutants.

Indications of low permeability in the alluvial aquifer in this area, along with the fact that the gradient reversal from a generally eastward flow in the valley to a westward flow occurs near the alluvium/bedrock interface, suggests that communication between alluvial and bedrock aquifers is limited, at least locally. This could be due to the presence of debris flow, fault gouge, or other relatively low-permeability deposits near the eastern edge of the East Pit. Low recharge rates following bailing or pumping in both MW-1 and MW-2 suggest low permeability of at least some alluvial sediments near the margin of the Chuckwalla Valley. In situ aquifer testing at MW-2 indicates permeability may be as low as 7×10^{-6} cm/sec. Low-permeability alluvial deposits may be acting to limit communication between the bedrock aquifer in the mine area and more permeable portions of the alluvial aquifer found further to the east and thus facilitating formation of a groundwater divide near the bedrock/alluvium interface.

The escape of leachate from the landfill is considered unlikely, since the bottom portions of the landfill will be lined with a layer of low-permeability soil and a synthetic liner (as required by the appropriate permitting agency). In addition, leachate which accumulates at the base of the landfill will be collected and pumped out of the landfill for treatment and disposal. If the leakage of leachate were to occur, it would be anticipated from the lowest elevation portions of the excavation. Bedrock is found beneath these portions of the landfill.

The following measures have been incorporated into the project design to prevent leachate migration into local groundwater.

Landfill Liner. California Code of Regulations, Title 23, Division 3, Chapter 15 (1984) state that new Class III landfills shall be sited where soil characteristics, distance from waste to groundwater, and other factors will ensure that no impairment of beneficial uses of surface or groundwater occur beneath or adjacent to the landfill. Although factors such as annual precipitation, background quality of groundwater, and current and anticipated use of groundwater indicate that there will be no impairment of beneficial uses of groundwater, the entire area underlying refuse will be lined.

A preliminary determination by the County Solid Waste Division would require that MRC construct a composite liner consisting of clay and plastic over certain portions of the landfill.

The area likely to require the composite cover would be the lowest elevations of the landfill—those most likely to receive leachate. All other areas underlying refuse (floor and side slopes) would be lined with a clay liner. Both the composite liner and the clay liner would use the reserve of low-permeability fine tailing from previous ore mining operations at the site. When compacted to 90 percent of maximum density, the tailing material displays laboratory permeabilities ranging from a low of 1×10^{-8} to a maximum of 8.8×10^{-6} cm/sec. The lower end of this range falls within the performance standard identified above. Quality control testing will be performed during liner placement to ensure that only material with permeability below 1×10^{-6} cm/sec is used for liner. Other physical properties of the tailing material are consistent with its use as a landfill liner, and no hazardous concentrations of metals or other substances have been found to be contained in the material (Hanson 1990; SCS Engineers 1988a, 1989a). The low-permeability, on-site material meets other Chapter 15 requirements for "clay liners," which are that at least 80 percent of the material shall pass a No. 200 U.S. Standard sieve and that the soil have a significant clay content and be classified SC, CL, or CH in the Unified Soil Classification system.

Drainage Control. Landfill design will include a drainage control system which will minimize run-on of surface water. The drainage system is described fully in the Drainage section (Section IV.F.). Minimization of run-on will decrease the water available for leachate production in the landfill.

Leachate Collection System. Landfill design will include a leachate collection system to allow removal of accumulated leachate if it is formed. By minimizing the quantity of leachate which accumulates in the landfill, the operator will minimize the opportunity for leakage of leachate. The specific details of leachate collection system design are schematically shown in Figures 23-26. The system is addressed fully in Appendix C.

Daily Soil Cover of Refuse. The entry of moisture to the refuse will be further inhibited by a final cover which includes a low-permeability layer of soil placed over completed sections of the landfill. Final cover will consist of several layers of soil and will be designed and constructed to minimize percolation of precipitation through refuse. The lowest layer will consist of a minimum two feet of compacted foundation material; above this, a minimum one-foot-thick layer of compacted soil will be emplaced, with a permeability equal to or less than the landfill liner; the top of the final cover, a layer consisting of not less than one foot of soil, will be designed to support vegetative growth. Actual specifications of the final cover will be approved by the applicable permitting agency.

An intermediate cover will be placed over those sections of the landfill which are expected to remain inactive for extended periods of time. Intermediate cover will be designed and constructed to minimize the percolation of precipitation through refuse.

LFG Control System. Migrating LFG that contains volatile organic compounds can be a source of groundwater pollution, if uncontrolled. In addition, carbon dioxide in LFG can dissolve in groundwater and result in lower pH, which could, in turn, mobilize metal ions.

These sources of potential groundwater degradation will be controlled by recovering LFG from the landfill. By preventing the buildup of LFG, the driving force behind gas migration will be removed. The LFG control and recovery systems are described more fully in the Air Quality section. Additional controls on LFG migration will be provided by the low-permeability landfill liner, which will minimize lateral migration of gas.

Phasing. It is possible that if the lowest portion of the landfill were to extend below the projected water table, groundwater pressure at significant head on the outside of the liner could cause liner failure and subsequent entry of groundwater into the landfill. As a mitigation measure to prevent this possibility, refuse will be placed at a level well above the highest-historically known groundwater level. The lowest point in the present East Pit excavation is at an elevation of approximately 705 feet above MSL. When the central portion of the East Pit is scheduled for landfilling, this level will be raised substantially by filling the lowest part of the East Pit with coarse tailing material or overburden to a level determined by the appropriate approving agency. The phasing plan for the landfill avoids disposal in the deepest part of the East Pit for some 80 to 85 years. This degree of separation between historic groundwater levels and the lowest elevation where landfilling will occur and the installation of a leachate control and monitoring system are anticipated to mitigate this potential impact to levels of insignificance.

The impact of landfill leachate on usable groundwater is not expected to be significant because of the relatively small quantities of leachate that will be generated in this landfill, because of planned engineering controls such as a low-permeability liner and leachate collection system, and because of the isolation of the site from areas of beneficially used groundwater.

Groundwater Monitoring. To provide ongoing groundwater monitoring during landfill operations and following landfill closure, a system of detection/monitoring wells will be installed. This system will be designed to detect movement of pollutants from the area of the landfill in groundwater. For this purpose, wells will be placed downgradient close to the margin of the landfill. Water quality at these points of compliance will be compared with background water quality.

Title 23, CCR, Chapter 15 regulations specify that a sufficient number of wells shall be installed to monitor background water quality and water quality at points of compliance. The wells must be logged by a geologist and must be able to accurately monitor water level and chemical indicator parameters. Prior to installation of the groundwater monitoring system, approval of the proposed program will be obtained from the RWQCB.

At present, five dedicated monitoring wells exist in proximity to the area proposed for landfilling. These wells will be supplemented by other groundwater monitoring wells located downgradient of the landfill. Due to the size and configuration of the landfill, it is anticipated that a minimum of four downgradient wells will initially be monitored. In addition, at least one groundwater monitoring well will be constructed upgradient of the landfill, so that water quality can be measured in an area beyond the potential effect of the landfill. The number and the location of wells will be determined during the permitting stages of landfill design, subject to approval by the RWQCB.

Construction methods and details of the groundwater monitoring wells will be approved by the RWQCB. Alluvial wells will be drilled probably using air or mud rotary methods. The bedrock wells will be drilled probably using air rotary methods in conjunction with a downhole percussive tool. Samples will be collected during drilling to provide information on lithology. A log of each well will be prepared by an on-site geologist working under the direct supervision of a geologist registered in the state of California. The well log will include information on well location, driller, drilling equipment, borehole diameter, depth, dates and times that various operations were performed, and geological observations.

The wells will be sampled and analyses regularly performed as specified by the RWQCB in their waste discharge requirements. It is anticipated that laboratory analyses will consist of a number of tests selected from among the ones being performed for background groundwater monitoring (described in the subsection on background groundwater quality monitoring).

Mitigation

The project design includes specific measures to mitigate potential groundwater quality impacts. These measures discussed above include the installation of a composite liner, a drainage control system, a leachate collection system, daily compacted soil cover of refuse, an LFG collection system, project phasing, and groundwater monitoring wells. No additional mitigation would be required.

Significance After Mitigation

The proposed action would not result in any significant impacts to groundwater quality.

b. Reduced Landfill Operations Alternative

Impacts

The impacts for the reduced landfill operations alternative would be slightly less than the proposed action and not considered significant.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

The reduced landfill operations alternative would not result in any significant impacts to groundwater quality.

c. Proposed Action with Rail Access Only Alternative

Impacts

This alternative would result in similar impacts as the reduced landfill operations alternative.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

There would be no significant impacts to groundwater quality as a result of the rail access only alternative.

d. No Action Alternative

Impacts

The No Project alternative would avoid all potential impacts and the need for mitigation measures identified in conjunction with the proposed action.

Mitigation

No mitigation would be required.

Significance After Mitigation

This alternative avoids all potential impacts.

2. Surface Water Quality

Assumptions and Assessment Guidelines. During operation of the proposed landfill, pollution of surface waters could result from the contact of surface water with refuse. The potential sources of surface water are precipitation, run-on from surrounding slopes, and run-on of floodwaters from Eagle Creek. Impacts to surface water quality would be considered significant if there were bodies of surface water within one mile of the landfill site which could be adversely impacted by the proposed landfill operations.

a. Proposed Action

Impact

Prior to the filling of the East Pit to existing surrounding grade, surface waters which might enter the landfill would be diverted to avoid contact with the refuse. The final landfill surface would be elevated above the present East Pit rim. A low-permeability layer that would separate the surface water from the refuse will be incorporated into the final area of the landfill.

Because of the low level of precipitation in the area, and with the implementation of the planned landfill cover provisions, it is anticipated that impacts on downstream surface water will be insignificant. Mitigation measures recommended for the drainage system are described in the drainage section.

The exposed portion of the Colorado River Aqueduct, which crosses the Chuckwalla Valley, is approximately 6,000 feet east-northeast from the nearest part of the proposed landfill. Because of the distance involved, it is not anticipated that windblown material would be deposited in the aqueduct. Landfill operations will include protective fencing and a litter control program and will ensure that refuse is promptly incorporated into the working face of the landfill to limit the opportunity for litter formation. Further, the section of the aqueduct adjacent to the project site is covered.

The impact of the proposed landfill on surface water quality is expected to be insignificant, because there are no bodies of surface water within one mile of the landfill site with the exception of the industrial pond. Nevertheless, the following measures to ensure the protection of the quality of surface waters in the vicinity of the landfill have been incorporated into the project design:

a) Compaction of waste prior to placement in containers to minimize the escape of paper and light material.

b) The use of closed containers for transport of refuse to the working face of the landfill.

c) Compaction of refuse into the working face of the landfill as rapidly as practicable to reduce the opportunity for the spread of litter.

d) Installation of fencing to trap windblown litter.

e) Regular litter pickup by landfill personnel to control the spread of litter within the landfill and to prevent litter from spreading beyond the project boundaries. Litter control is described in more detail in the recreation and visual resources section of this draft EIS/EIR.

f) Use of watering to control dust emissions as described in the Air Quality section.

g) Recycling and treatment of truck/container wash water.

h) Application of at least six inches of compacted soil as daily cover over the refuse at the end of each working day.

i) Diversion of surface run-on within the East Pit.

Mitigation

The proposed action would not result in significant surface water quality impacts; thus, no mitigation is required. However, to ensure the protection of the quality of surface waters in the vicinity of the landfill, the project design includes the following measures: compaction of waste; use of closed containers for transport of refuse; installation of fencing to trap windblown litter; regular litter pickup, watering for dust control, daily cover over the refuse, and diversion of surface run-on within the East Pit. These project components are described in detail above.

Significance After Mitigation

There will be no significant impacts to surface water quality. Mitigation measures were added to the project design to ensure the protection of surface water quality.

b. Reduced Landfill Operations Alternative

Impact

As the effects of the proposed action are not found to be significant, the reduced landfill operations impacts on the quality of surface waters in the area would not be significant as well.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

All potential impacts to surface water quality for this alternative are considered insignificant.

c. Proposed Action with Rail Access Only Alternative

Impact

As the effects of the proposed action are not found to be significant, the rail access only alternative impacts on the quality of surface waters in the area would not be significant as well.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

All potential impacts to surface water quality for this alternative are considered insignificant.

d. No Action Alternative

Impact

This alternative would avoid all potential impacts.

Mitigation

No mitigation would be required.

Significance After Mitigation

This alternative avoids all potential impacts.

3. Groundwater Use and Water Supply

Assumptions and Assessment Guidelines. Impacts from the proposed action would be considered significant if it is determined that the landfill operations would deplete substantially the region's groundwater resources.

a. Proposed Action

Impact

Numerous wells in the project vicinity provide water to the project area for agricultural, industrial, and domestic uses. Drinking water is provided by tanker truck or in bottles. The landfill operation's maximum water consumption is expected to be about 1,793 acre-feet per year with a 10 percent contingency allowance for worst-case analysis which totals to approximately 1,972 acre-feet per year. About 1,650 acre-feet of the total will be used for haul road dust control and the remainder for container cleaning, vehicle wash and maintenance, personal use, liner preparation, landscaping, and daily cover dust control. Due to evaporation, none of this water would recharge the groundwater supply. A summary of expected water consumption associated with the landfill operations is shown below.

Landfill Activity	Acre-feet per year
Haul road dust control	1,650
Container cleaner	7
Vehicle wash and maintenance	16
Personal use	7
Liner preparation	7
Landscaping	11
Daily cover dust control	95
Subtotal	1,793
10% contingency allowance	179
TOTAL USAGE	1,972

Based on Mann's study (1986), approximately 23,000 acre-feet per year of groundwater is used in northwestern Chuckwalla Valley. The total inflow to the basin is estimated at 12,240 acre-feet per year. Thus, the net drawdown per year calculates to 10,760 acre-feet. Table 9 shows the various water uses in 1986 contributing to this net drawdown. If this drawdown remained constant, and using the total groundwater reserve estimate of 6 million acre-feet based on U.S. Geological Survey calculations of basin water resources discussed earlier, approximately 557 years of groundwater reserves remain.

The total water usage anticipated from landfill operations is approximately 1,972 acre-feet per year, as shown above. Adding the project's water consumption to Mann's estimated 1986 water uses, this amount calculates to a total net water consumption amount of 12,732 acre-feet per year for the life of the project (115 years). If all other conditions remained the same, the

increased water use would reduce the time for total drawdown from 557 years to 536 years. This is not a substantial depletion of the region's groundwater resources and, thus, is not considered a significant impact.

While approximately 88 percent of the region's total water consumption is dedicated to agricultural uses, the project's water consumption would represent approximately eight percent. However, because the region's water resources are currently in an overdraft condition, any additional water use would represent a cumulative impact on the region's water resources. Because this is not a substantial contribution to the overdraft condition, this cumulative impact to the region's water resources is not considered significant.

The proposed landfill operation is anticipated to generate a maximum of 163 jobs which translates to an increase in population of roughly 587 people. Based on these figures, this would create a need for approximately 145,500 gallons of domestic water per day. The overall increase in water demand for domestic use would equate to about 163 acre-feet per year. This would incrementally add to the cumulative adverse effects on the groundwater supply in the region.

Mitigation

Impacts to groundwater use and supply are not considered significant, and no mitigation is required.

Significance After Mitigation

Direct and cumulative impacts to the potential groundwater supply are not considered significant.

b. Reduced Landfill Operations Alternative

Impact

It is estimated that overall water consumption associated with the reduced landfill operations alternative would decrease approximately 10 percent or 197 acre-feet/year less than the proposed action. The Chuckwalla Valley would continue to exist in an overdraft condition. Based on the reduced landfill operations alternative, cumulative impacts to the groundwater supply of the region would exist, but they are not considered significant.

Mitigation

No mitigation is required.

Significance After Mitigation

Direct and cumulative impacts to the potential groundwater supply are not considered significant.

c. Proposed Action with Rail Access Only Alternative

Impact

Cumulative water consumption impacts resulting from the rail access only alternative would be the same as those associated with the reduced landfill alternative.

Mitigation

Mitigation is not required.

Significance After Mitigation

Cumulative impacts to the potential groundwater supply are not significant.

d. No Action Alternative

Impact

Under this alternative landfill operations would not occur; therefore, water consumption impacts would not exist. However, it should be noted that the land exchange would not take place under the no action alternative. Subsequently, BLM would have patented mining claims on the subject property and potential mining activities could reoccur which would impact the groundwater reserves. Water use during mining consumed approximately three times the projected water use of the proposed action.

Mitigation

No mitigation would be required.

Significance After Mitigation

This alternative does not avoid potential impacts to groundwater supply.

B. Public Health and Safety

The landfill construction and operations, the BLM/Kaiser Steel Resources, Inc. land exchange, the Eagle Mountain rail line and Eagle Mountain Road Extension right-of-way grants, and Riverside County Plan Amendment would not have any significant impacts on public health and safety. The following discussion provides a detailed evaluation of the effect of the proposed action on hazardous wastes in the waste stream; landfill gas and gas condensate; fires; vector and disease control; and worker and public safety.

1. Hazardous Wastes in the Solid Waste Stream

Assumptions and Assessment Guidelines. For impact analyses, assumptions were made based on the known information regarding the waste stream to a landfill. Several state and federal statutes and regulations govern the handling and disposal of hazardous wastes. Recent state law requires significant reductions in the volume of solid waste going to landfills. Since there are no available numerical guidelines for this issue, it will be presumed that the operation of transfer stations, transportation systems, and the project itself in a manner that is consistent with all applicable regulations governing the handling of hazardous and nonhazardous waste will avoid significant impacts. No evidence exists that the small percentages of hazardous materials found in the current solid waste stream pose a significant health problem to the public.

a. Proposed Action

Impacts

Exposure to hazardous materials would be greatest at off-site waste transfer stations and materials recovery facilities. Although these facilities are not permitted or covered by any of the approval actions directly related to the Eagle Mountain landfill project, they are discussed here since they are related to the project in a secondary manner. At these transfer stations and materials recovery facilities, waste would be sorted and separated prior to being transferred to containers for transport to the landfill site. The sorting process typically involves hand removal of unacceptable materials—liquid waste, hazardous waste, sewage sludge, incineration ash, radioactive, biological, or infectious waste, or other special solid wastes—from the nonhazardous solid waste spread on a tipping floor. Any hazardous waste would be set aside for special handling in accordance with procedures established in solid waste facilities permits which govern the operation of these facilities.

The actual siting of the off-site transfer stations themselves is a matter for regulation by the local jurisdictions containing the stations and the appropriate state agencies. Because of the need for rail access, it is reasonable to assume that most transfer stations would be located in industrial areas. The detailed siting criteria, buffers, means to restrict public access, and other

requirements for the transfer stations would be established in a local conditional use permit (or similar land use permit) and in the solid waste facilities permit required for each station. These measures would also reduce the potential for public exposure to hazardous materials at the transfer stations or materials recovery facilities.

With respect to the potential for public exposure to hazardous wastes in the material at the project site itself, it would be reduced by the sorting process described above. This requirement for screening and removal of hazardous waste at processing and transfer stations and materials recovery facilities is a typical component of permits applicable to those activities. The review of the California Integrated Waste Management Board in approving solid waste facilities permits and a load check program where the County of Riverside has inspection rights for all solid waste coming to the project will monitor this requirement. Any waste generated from the Desert Center or other local areas will be inspected for hazardous wastes at an on-site inspection station located in the Phase II container handling yards.

All refuse transported to the project site will also be screened to detect the presence of radioactive materials. Inspection would be accomplished by passing the refuse (MRF) or containers (landfill) under a detection device to detect materials that are emitting radioactivity. If radioactive materials are detected, intensive manual inspection of the load using hand-held detection equipment will be performed. The offending materials will be segregated from the load and stored in accordance with applicable regulations pending disposal at a licensed facility.

Hazardous materials and wastes such as solvents, fuels, and other products used for maintenance or otherwise generated on-site would be collected, stored, and transported for proper disposal in accordance with applicable regulations as with the hazardous materials discovered in the waste stream.

In summary, the potential for public exposure to hazardous wastes is not a significant impact for two reasons: the concentration of hazardous wastes in the municipal waste stream is quite small for the reasons discussed above, and the operation of the project is such that the public would not have access to areas where solid waste is handled, transported, or placed.

On a more fundamental level, the elimination of hazardous waste from municipal refuse depends on compliance by the public with applicable regulations. Increased public education, further availability of recycling, and measures to promote source reduction must be pursued by local governments and agencies charged with regulating hazardous wastes. Many communities in the state have programs and facilities so that the residents have a convenient way of disposing of small quantities of hazardous household materials to avoid indiscriminate dumping of those materials. Continued efforts by communities to provide these facilities will further limit the small amount of hazardous materials entering the municipal solid waste stream.

The railroad and Eagle Mountain Road right-of-way grants, as well as the exchange of public and private lands will have no impact on hazardous waste in the waste stream.

Mitigation

Despite the fact that the concentration of hazardous waste in the waste stream is quite small and the public in not generally exposed to the waste stream, protective measures would be incorporated into the project design. These measures, described in detail above and in the project description, include the inspection and screening of refuse and the removal of hazardous materials encountered at local MRFs and additional waste inspection at a regional level by the Riverside County Local Enforcement Agency. No other specific mitigation measures beyond these existing requirements and aspects of the project design are necessary.

Significance After Mitigation

The potential for public exposure to hazardous materials is not significant.

b. Reduced Landfill Operations Alternative

Impacts

The slight overall reduction in daily waste disposal under this alternative would result in a further slight reduction in the potential for public exposure to hazardous wastes. This alternative would not alter the conclusions regarding impacts and mitigation related to hazardous wastes.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

The potential for public exposure to hazardous materials is not significant.

c. Proposed Action with Rail Access Only Alternative

Impacts

The slight overall reduction in daily waste disposal under this alternative would result in a further slight reduction in the potential for public exposure to hazardous wastes. The difference would not, however, be significant or notable.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

The potential for public exposure to hazardous materials is not significant.

d. No Action Alternative

Impacts

This alternative would avoid any potential exposure to hazardous materials in the refuse generated on-site or during long-distance transport of solid waste. Typical exposures which are associated with municipal solid waste generation, collection, transfer, and disposal in conventional landfills, including the Desert Center Sanitary Landfill, would continue throughout southern California.

If the land exchange does not occur and the ownership of the Eagle Mountain townsite reverts to BLM, it is possible that BLM could sell property in the townsite to private citizens. If this occurs, the Desert Center Sanitary Landfill would process slight increases of solid waste with a slightly increased potential for encountering hazardous materials.

Mitigation

No mitigation is required with this alternative.

Significance After Mitigation

The potential for public exposure to hazardous materials is not significant.

2. Landfill Gas and Landfill Gas Condensate

Assumptions and Assessment Guidelines. The following impact assessment is based on the applicable federal and state regulations for landfill gas and landfill gas condensate. These regulations govern the control and monitoring of LFG emissions and their disposal. Potential hazards to site personnel resulting from accidental spills due to the generation and handling of LFG condensate would be considered a significant public health and safety impact. A significant impact would also be assessed for public exposure to LFG through subsurface migration and groundwater pollution.

a. Proposed Action

Impacts

The rate of LFG production would be dependent on many factors, the most important of which include refuse composition and tonnage, and moisture content. A range of estimates of LFG to be generated at the Eagle Mountain site was prepared for the lifetime of the project (1992–2097). These estimates are based on the following assumptions:

- Unit refuse generation rates are expected to range between 0.02 cubic feet of LFG per pound of in-place refuse per year (cu ft/lb-yr) and 0.07 cu ft/lb-yr.
- A one-year lag time between refuse placement and initiation of anaerobic decomposition.
- The landfill site will reach its maximum refuse input of 20,000 tons per day in 5 years (by 1997), an optimistic assumption.
- Waste composition and moisture content will remain unchanged (a worst- case scenario). That is, recycling or other waste reduction efforts will not affect significantly LFG generation.

During the first few years of operation, little or no LFG would be produced. By the end of the second year of operation (1993), up to 1million cubic feet per day of LFG may be produced. By the year 2092, the daily generation rate is expected to range between 78 and 82 million cubic feet per day. The reader should be cautioned, however; estimates of LFG production beyond a 20- to 30-year period are speculative. Within the next 100 years, there will be significant technological changes, including the methods by which wastes are generated, collected, recycled, and ultimately disposed and the types of waste generated. The quantities and types of materials requiring landfill disposal and, hence, the amount of LFG generated, are subject to change pending future technological advancements and environmental, economic, and political considerations.

If not controlled, the LFG could migrate horizontally through fractured bedrock or alluvial soils surrounding the East Pit area, through fill slopes, or vertically through the landfill cover. Safety problems and an explosion hazard could be potentially caused by LFG generation and migration principally due to its methane content. Methane (the natural gas used in most households) is an odorless gas which is potentially explosive at concentrations between 5 and 15 percent by volume in air. In the landfill mass itself, methane will not explode, because there is insufficient oxygen available to support combustion. However, in the absence of LFG control measures, gas can migrate to and accumulate in confined spaces such as subfloor areas, basements, utility vaults, and ducts. If an ignition source such as a pilot flame or electrical spark is provided, a fire or explosion could result. Methane can also accumulate in buildings above the ground surface, particularly in wall spaces and other enclosed areas. Permanent structures proposed as part of the landfill project include one or more buildings to be located in the container handling yard. These facilities would include an office, employee area, storage

provisions, and laboratory. Measures to mitigate against gas migration into on-site or off-site structures are warranted and are discussed below.

There is also a potential for subsurface migration of LFG and its subsequent release into enclosed structures. Under certain conditions, the VOC content of LFG can present health hazards. Data regarding composition of LFG, anticipated concentrations, and their effects are presented under Section IV.D., Air Quality. In general terms, with the implementation of proper LFG migration control techniques and considering natural dilution effects, the potential for subsurface migration of unhealthful concentrations of VOCs into indoor environments is considered to be remote. The acute toxicity effects of these compounds are not a concern unless humans were to be exposed to undiluted LFG. In this case, asphyxiation would be the imminent hazard.

Another possible impact from LFG is groundwater pollution if the LFG contacts subsurface waters and increases dissolved carbon dioxide concentrations or transfers VOCs to groundwater. If LFG becomes present in the root zone of plants, it may reduce the ability of vegetation planted on the landfill surface to grow adequately.

The quantity of condensate generated during the LFG extraction process is a function of LFG and ambient temperatures, flow rates, recovery system design, and operating parameters. A range of 240 to 670 gallons of condensate generated per million cubic feet (at standard temperature and pressure) of LFG recovered has been reported (SCS Engineers 1987). By the year 2092, approximately 11,500 gallons of condensate could be generated on a daily basis. This estimate is based on an LFG generation rate of 56 million standard cubic feet per day, an 80 percent gas recovery factor, and worst-case conditions for ambient temperature (using 56 degrees Fahrenheit).

Potential impacts related to the generation and handling of LFG condensate include pollution of surface or groundwater and potential hazards to site personnel due to accidental spills. Pollution of surface or groundwater is discussed in the Water Quality section of this draft EIS/EIR.

As required by the appropriate permitting agencies, the area over which refuse will be placed will be lined with fine tailing remaining from the iron mining operation and, in certain locations, a synthetic liner. The extent of coverage, thickness, and permeability of the material will be defined by the permitting agency. Details on the construction of the liner are included in Section IV.A., Water Quality. The liner would restrict the downward or lateral gas movement so that the gas can be recovered by the LFG extraction system.

Clay liners can be subject to cracking or desiccation when allowed to dry out (as may occur when used solely as landfill cover). However, the proposed liner at Eagle Mountain is expected to maintain its integrity due to the fact that it will not be exposed to the atmosphere and trace

moisture inherent to the landfill mass and the generated LFG will help retard drying or cracking. As a primary mitigation measure, the liner is expected to effectively impede LFG migration.

The LFG recovery/utilization and migration control system would be designed and constructed to capture gases and effectively impede gas migration and potential groundwater pollution from this source. These measures are discussed in Sections IV.A., Water Quality, and IV.D., Air Quality, respectively. LFG systems, however, cannot collect all of the gas generated in a landfill. The percentage of gas that would be collected is a function of landfill geometry, permeability of the landfill cover, and the design and operating efficiency of the system. LFG recovery rates are not readily measurable. Due to the placement of the liner, the depth of fill, and the fact that the system would be constructed as the fill advances, it is anticipated that the gas recoverability at Eagle Mountain would be relatively high. For purposes of this draft EIS/EIR, a recovery factor of 80 percent is assumed.

Using the above estimate and peak projections of gas generation, up to 16.4 million cubic feet per day of LFG could be generated that may not be captured by the recovery system. Most of this gas would migrate to the air through intermediate cover soils and fill side slopes (those not in contact with the liner and wall of the East Pit). There is a remote possibility that some of the LFG could migrate through adjacent soils away from the landfill mass.

Permanent subsurface LFG monitoring wells or detectors/ alarms will be placed near structures in the immediate vicinity of the East Pit, including those proposed for maintenance and container handling offices. Structures in the town of Eagle Mountain would not be affected by LFG migration due to their distance from the refuse mass and implementation of the above control methods. To provide assurance that there is no potential problem, routine subsurface monitoring is recommended for this area. Since there are several hundred buildings in the town, it would be impractical to install and test wells near every structure. A network of five to six monitoring wells would be placed on approximate 1,000-foot centers in soils along the northern town perimeter. The wells will be constructed to allow monitoring to a depth of 20 feet below grade. Specific monitoring well locations, depth, design specifications, and sampling frequencies would be subject to approval of the Riverside County Department of Health as part of the solid waste facilities permit.

If applicable, subfloor LFG protection measures will be incorporated into the design and construction of all permanent structures proposed as part of the landfill project. These could include installation of any one or a combination of the following:

1) An impermeable membrane barrier below the foundation slab.

2) Active or passive subfloor ventilation provisions.

3) Special explosion-proof seals for all utility conduits entering structures from below grade.

4) Permanent monitoring probes installed in the subfloor environment to verify system effectiveness.

LFG condensate is a potentially hazardous material and is subject to special provisions for its collection, handling, and disposal. The condensate will be collected in sumps at the low points of the LFG system and pumped into steel tanks and separated in the LFG treatment system. LFG tanks will be bermed to prevent spillage from reaching the environment. LFG condensate will be treated to separate the aqueous phase from the organic phase. The organic phase will be stored on-site as a hazardous waste for periodic removal to a licensed disposal facility. The water fraction will be used for dust control on unpaved roads or will be disposed of at the Kaiser sewerage treatment facility in the southeast portion of the town of Eagle Mountain. A more detailed discussion of leachate collection and treatment is provided in the project description.

The railroad and Eagle Mountain Road right-of-way grants and the public/private land exchange will have no impact on the production of LFG and LFG condensate.

Mitigation

The project design contains measures to minimize public health and safety impacts resulting from the migration of landfill gas and landfill gas condensate. These measures include the landfill liner, LFG collection system, and LFG condensate collection system designed to capture gases and impede gas migration as described above and elsewhere in this draft EIS/EIR. Specific requirements for LFG monitoring and any special building designs have not yet been determined. These will be established by the County Department of Health and the SCAQMD during their reviews of their respective permits for the project.

Significance After Mitigation

The measures incorporated into the project design will lower the potential public health and safety effects of LFG and LFG condensate to below a level of significance.

b. Reduced Landfill Operations Alternative

Impacts

The potential impacts for LFG and LFG condensate under this alternative would be identical with the proposed action. The measures to control LFG and LFG condensate under this alternative would be identical with those of the project as proposed. The daily refuse deposited would be slightly lower, but the overall capacity of the project would not be affected. The numerical estimates for the project would apply under this alternative.

Mitigation

Mitigation would be identical with the proposed action.

Significance After Mitigation

The proposed measures of this alternative will lower the potential public health and safety effects of LFG and LFG condensate to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

The potential impacts for LFG and LFG condensate under this alternative would be identical with the proposed action. The measures to control LFG and LFG condensate under this alternative would be identical with those of the project as proposed. The daily refuse deposited would be slightly lower, but the overall capacity of the project would not be affected. The numerical estimates for the project would apply under this alternative.

Mitigation

Mitigation would be identical with the proposed action.

Significance After Mitigation

The proposed measures under this alternative will mitigate the potential public health and safety effects of LFG and LFG condensate to below a level of significance.

d. No Action Alternative

Impacts

All public health and safety impacts represented by LFG and LFG condensate would be avoided at Eagle Mountain under this alternative.

Mitigation

No mitigation is required for this alternative.

Significance After Mitigation

The LFG and LFG condensate effects associated with this alternative are not considered significant.

3. Fires

Assumptions and Assessment Guidelines. Several types of potential fires exist in the transport and disposal of the municipal waste stream. Factors involved in assessing the significance of fire impacts are fire prevention, time of response, accessibility of response, impacts to surrounding areas during response, and by-products of combustion materials. Response time and fire protection are discussed in the Utilities and Services section of this draft EIS/EIR. Any increased public exposure to fires resulting from the proposed action would be considered a public health and safety hazard.

a. Proposed Action

Impacts

Subsurface Fires. All landfills contain the combustible materials, insulating characteristics, and other attributes necessary to allow subsurface combustion. The ignition and propagation of subsurface landfills are a function of several factors, including waste composition, moisture content, available oxygen, and ambient pressure in the area of combustion (Stearns and Petoyan 1984).

Subsurface landfill fires can occur as combustible refuse materials are heated, either through biological decomposition or chemical oxidation. A continuous source of oxygen is necessary for this process; oxidation of the refuse materials can generate heat to the point of combustion. As temperatures within the landfill increase, pyrolytic reactions may also occur.

Subsurface fires are usually triggered by either one of the following mechanisms:

1) Burial of "hot loads" with other refuse materials. The potential for this occurrence is not considered significant, as discussed below.

2) Improper operation of LFG recovery or migration control systems. Overdrawing LFG extraction wells or trenches, especially those installed near the perimeter, slope face, or fill surface, or breaks in the subsurface collection pipe caused by landfill settlement could result in a situation where air can be inadvertently drawn into the refuse mass. Open cracks and fissures in the landfill surface may facilitate drawing air through the site cover.

Open flames within the landfill are not likely to occur during a subsurface fire. However, subsurface fires may result in accelerated local settlement in the vicinity of the fire and venting of smoke or combustion by-products through the landfill. These by-products may include particulates, unburned hydrocarbons, carbon monoxide, and various volatile organic compounds, depending on the types of buried refuse. A more detailed discussion of surface fires can be found below.

Surface Fires. Surface fires at landfills are typically small and of short duration; excavation areas on the project site would serve as a firebreak in the event of a fire. Surface fires are normally limited to the working face and tipping area, except in those cases where a vehicle catches fire or burning refuse falls from a vehicle.

At the working face, the refuse subject to burning would be limited to that material deposited since the previous application of daily cover. The primary nuisance and potential hazard of a landfill fire are related to possible burn injuries, smoke exposure to workers near the fire area, and visible smoke emanating from the site. As a nuisance, smoke causes eye and throat irritation and unpleasant odors and detracts from the aesthetics of the location if visible from a distance. As stated previously, landfill surface fires are typically small and of short duration; therefore, the major potential impact is to landfill workers who extinguish these fires. The rapid dissipation of the smoke and the distance and location to the nearest residential uses in the town of Eagle Mountain reduce the potential significance of this impact.

Burning refuse may also release toxic emissions, depending on the type of refuse combusted. Since municipal solid waste generally contains only a small percentage of hazardous materials and because of the rapid dilution of smoke in the atmosphere, it is unlikely that nearby residents would be exposed to concentrations that pose a risk to health and safety in the event of a landfill fire.

Right-of-Way Fires. Sparks from the brakes of trains traveling through the arid desert climate may result in fires along the right-of-way. Although such occurrences are not likely to be frequent, portions of the Southern Pacific main line and the private rail line between Ferrum Junction and Eagle Mountain are susceptible to this impact. Since portions of the rail rights-of-way are not easily accessible except by four-wheel-drive vehicles, the emergency response capacity of County fire fighting services may be limited in the event of a right-of-way fire. Southern Pacific currently implements a vegetation/weed abatement policy to spray a federally approved herbicide 13 feet on each side of its right-of-way on an annual basis; however, at present there is no herbicide spraying permitted on the BLM right-of-way portion of the rail line.

A vegetation/weed abatement policy planned for the private rail line from Ferrum Junction to Eagle Mountain will be to use selective thinning and use of a ballast regulator rather than a

herbicide. Potential impacts to biological resources are addressed in the Section IV.G. of this draft EIS/EIR.

Fires in Refuse Loads. Fires in refuse loads are possible through spontaneous ignition if correct conditions occur or from hot or smoldering materials, such as charcoal, that are thrown away in trash. While this type of fire is theoretically possible in any refuse, the potential within the proposed action is quite low for two reasons. First, all refuse in the project would have been screened at transfer stations where notably burning or smoking materials would have been removed or extinguished. Second, in the compaction process prior to loading waste into the transport containers, voids or air spaces capable of supplying oxygen to support combustion are greatly reduced. Thus, the potential hazard of fires within the waste containers is not considered a significant impact.

For the small proportion of waste that may be delivered to the site from the local area by conventional refuse hauler truck, the potential for load fires would remain.

The primary measure to avoid the occurrence of subsurface fires is to ensure that the LFG recovery system is properly operated and maintained. Particular care should be taken to minimize air infiltration into buried refuse. LFG recovery system operation and maintenance guidelines would be developed and implemented through the landfill permit process. These guidelines would include monitoring for parameters indicative of a subsurface fire (e.g., elevated temperature, carbon monoxide) which should be performed regularly and reported to the County Department of Health.

In the event a subsurface fire does occur, there are several options available for its control and elimination. If the fire is detected near the surface, it can be excavated and extinguished. For deeper subsurface fires, control can usually be achieved by retarding the influx of oxygen by closure of the LFG extraction wells or trenches in the area and sealing all cracks or fissures in cover soils. For difficult fires, deep borings can be drilled and liquid carbon dioxide can be pumped into the landfill. The liquid carbon dioxide cools the material and displaces oxygen and is very effective in controlling this type of fire. This type of staged response would be incorporated into the emergency response planning for the project.

Surface fires would not present a unique hazard and would be controlled through conventional fire response procedures. The on-site emergency response capabilities would have access to large watering trucks and earth-moving equipment for fire control. The local fire district response time is also quite good, since a new fire station is already planned for the community of Eagle Mountain.

As described above, the potential for fires within the refuse loads themselves is not expected to be great. The emergency response plan, staff, and equipment maintained on-site and at

transfer stations would be adequate to respond to such incidents in conjunction with the local fire districts.

Potential fires within the railroad right-of-way are not expected to pose a significant hazard. To reduce the potential further, however, the operation plan by MRC would also include a regular inspection of the Eagle Mountain rail line and selective removal of vegetation or material within the right-of-way that may pose an increased fire hazard. The equipment and staff maintained on-site for the project operation and maintenance would also be available to respond to potential right-of-way fires. Mitigation for potential impacts to sensitive plant species along the right-of-way is outlined in Section IV.G. of this draft EIS/EIR.

The Eagle Mountain Road right-of-way and the exchange of public and private lands will have no impact on the potential for fires.

Mitigation

Features integrated into the project design to control potential fire hazards are discussed above and include such measures as the collection and control of landfill gases, the development and implementation of an emergency response plan for subsurface fires, conventional fire fighting procedures for surface fires, screening incoming waste and the removal of burning or smoking materials, and the maintenance of the railroad rights-of-way to remove vegetation and combustible materials.

Significance After Mitigation

The measures designed within the project and to be incorporated into the operating plans for the landfill would be adequate to control the potential fire hazards from the project. Thus, impacts would be below a level of significance.

b. Reduced Landfill Operations Alternative

Impacts

A change in the landfill configuration would not alter the daily operations of the project. The potential fire impacts, and response measures, under this alternative would be identical with the project as proposed.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

The measures designed within the project and to be incorporated into the operating plans for the landfill would be adequate to control the potential fire hazards from the project. Thus, impacts would be below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

The overall impacts of this alternative related to increased fire hazard would be the same as the project as proposed. Truck transport proposed by the project would not occur, and this would avoid the potential for fires related to truck operation. The difference would probably not be notable, however.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

The measures designed within the project and to be incorporated into the operating plans for the landfill would be adequate to control the potential fire hazards from the project. Thus, impacts would be below a level of significance.

d. No Action Alternative

Impacts

This alternative would avoid any new fire hazards at Eagle Mountain. The fire hazards at existing conventional landfills are similar to those of the project and would remain. For loads of waste which are taken to landfills without being processed through a transfer station, the potential fire hazard is slightly greater.

Mitigation

No mitigation is required.

Significance After Mitigation

This is not considered a significant impact.

4. Vector and Disease Control

Assumptions and Assessment Guidelines. According to the standards provided by the CIWMB, Title 14, CCR, Section 17707, the propagation, harborage, or attraction of flies, rodents, or other vectors should be controlled. This applies to transfer stations and landfill sites. Therefore, any propagation, harborage, or attraction of flies, rodents, or other vectors resulting from the proposed action would be considered a significant public health and safety impact.

a. Proposed Action

Impacts

The availability of food scraps, shelter, and breeding areas could attract animals, birds, and insects to the project site. The effect is likely to be similar to that related to the operation of other landfills and in some respects similar to other types of human activity. The most significant aspect of this impact is the potential to substantially increase the raven population, which in turn could lead to increased predation on the threatened desert tortoise. This issue is discussed fully in Section IV.G., Biological Resources. In other respects, the major concern is the potential to provide a breeding ground for disease-carrying organisms or other animals which are a nuisance in populated areas. Even though the site is isolated from large population centers, the proximity of the Eagle Mountain community warrants some concern for this issue. By implementing mitigation measures as part of the project design, the potential for attracting vectors, birds, animals, and insects to the site is low.

The primary measure to control the availability of food and refuse, and thus to minimize the attractiveness of the landfill to animals, is the state requirement that earthen cover material be placed over the refuse at least daily. The project plan would call for the placement of such cover at the end of the working day. During the daytime operation, the very intensive activity of heavy equipment spreading and compacting the refuse would serve to reduce the feeding and activities of most animals. The nighttime cover would minimize the availability of foodstuffs in the refuse and thus reduce the potential for a significant rodent or other animal population increase.

In addition to the earthen cover included in the project plan, the control of ravens and other birds during the day would occur through several proposed passive management techniques. These would include initially the use of monofilament line or other fencing or barriers to interfere with bird activity, possible use of "cracker shells" or other explosive noises to drive birds away, and a regular program to monitor the effectiveness of these measures. If more active management techniques are warranted, they will be pursued. This issue is described more fully in the biology section of this draft EIS/EIR.

The railroad and the Eagle Mountain Road right-of-way grants and the public/private land exchange would have no impact on vector and disease control.

Mitigation

The application of daily earthen cover as part of the project design is the primary measure to control vector populations at landfills. Additional measures such as installing appropriate barriers and using explosive noises have been incorporated in the the project design to control the raven population. These are described above and in the Biological Resources section of this draft EIS/EIR.

Significance After Mitigation

The measures identified in the project design related to animal and disease control would reduce potentially significant impacts to below a level of significance.

b. Reduced Landfill Operations Alternative

Impacts

The impacts associated with this alternative would be identical with the project as proposed relative to this issue.

Mitigation

Mitigation would be the same as required for the proposed action.

Significance After Mitigation

The components of the project design identified above would serve to reduce the potentially significant impacts to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

The impacts associated with this alternative would be identical with the proposed action relative to this issue.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

The measures identified in the project design related to animal and disease control would serve to reduce potentially significant impacts to below a level of significance.

d. No Action Alternative

Impacts

This alternative would avoid the potential augmentation of bird and other animal populations at the Eagle Mountain site and thus avoid impacts related to these populations. However, additional impacts could occur at existing disposal sites within the region potentially served by the project.

Mitigation

No mitigation is required.

Significance After Mitigation

The impact is not considered significant.

5. Worker Safety

Assumption and Assessment Guidelines. The significance level for worker safety is determined by the applicable regulations. These include the 1970 Occupational Safety and Health Act, the Minimum Standards for solid waste handling and disposal (Title 14), and the 1977 Mine Safety and Health Act. Any worker exposure to health and safety hazards would be considered a significant impact.

a. Proposed Action

Impacts

Effects on worker safety involve potential exposure to unsafe material in the solid waste itself, such as nails, glass items, or other sharp objects that can cause injury, and potential acute exposure to any remaining hazardous substances that may be in the solid waste. The activity around the container handling yard and at the working face of the landfill would involve the movement of heavy equipment and materials which also pose a workplace accident potential. Workers at particular risk of injury are the railcar off-loaders, heavy equipment operators, spotters of hazardous wastes, and traffic directors around the active face of the landfill.

The environment around any site of major grading activity is noisy. Workers are typically exposed to noise levels in excess of 90 decibels for long periods during the work day. The odors and localized dust levels within landfill work areas are also unpleasant, if not unhealthful, when experienced for long periods. These aspects of the project present an additional potential impact on worker safety.

After the landfill has been established for a number of years, landfill gas will be generated. If allowed to escape to the air above the working face of the landfill or to concentrate in structures associated with the landfill, the landfill gas can pose an extra hazard to workers. This topic is discussed in more detail in Section IV.D., Air Quality, but the potential hazard to worker health is recognized here.

The impacts related to the landfill are typical of all landfills. The hazards associated with the container handling equipment are typical of several large intermodal transport centers where these types of containers are transferred from ship to rail or rail to trucks. The project combines these hazards from separate activities into a single overall operation, but the individual hazards are fairly well understood and accommodated within their industries.

The railroad and the Eagle Mountain Road right-of-way grants, and the exchange of public and private lands would not have an impact on worker safety.

As part of the operation plan for the project, MRC will develop a standard set of procedures for employee activity in handling containers, moving containers to the landfill working face, emptying containers and spreading refuse, compacting and covering refuse, and all of the other maintenance activities associated with the project. These plans would be developed by MRC principals or employees who are experienced in rail operations, shipping container handling, and landfill operations. They would include detailed job and operation descriptions, an identification of safety equipment and procedures, training requirements, emergency response, and other contingency planning. The safety component of such operating plans is based on routine principles of industrial hygiene: recognition of the hazards and stresses present with a specific job, evaluation of the effects of the hazards, and control of the effects.

The operation of the Eagle Mountain landfill would be similar to other landfill operations, and worker health and safety protection measures are well known. Measures to protect workers from specific hazards, such as noise, local dust, and other items, would include specifications for personal protective equipment—ear plugs, gloves, hard hats, and dust masks, or the provisions of enclosed cabs on certain pieces of heavy equipment, mandatory use of eye shields and gloves for some jobs, and so on. Rotation of worker assignments to provide breaks, away from the more unpleasant work areas, may also be included in the work plan. Adequate supervision must be a component of any safety plan to ensure proper use of control measures and equipment, so they accomplish the tasks for which they were designed. These items which are designed to protect worker safety are requirements for disposal site operations established

by Title 14, Chapter 3, of the California Code of Regulations, as part of the Minimum Standards (Section 17666 et seq.). They will be reviewed and established as project conditions by the County health department.

Throughout the process of reviewing the work operation to identify hazards, evaluating the hazards, and designing various measures to control their effects, workplace guidelines established by the U.S. Department of Labor Occupational Safety and Health Administration will be used. The main point is that the response to these types of hazards is a normal part of the work plan for any landfill. County health department inspectors, charged with enforcing the conditions on the solid waste facilities permit, would be on the site on a regular basis to insure safe operating conditions.

The response to the potential long-term hazard represented by the generation of LFG, exposure to it, and its migration to the surface of the landfill or into nearby workplace structures is the requirement for a collection and disposal system for the LFG and for monitoring by the South Coast Air Quality Management District. The details of this system are outlined in Section IV.D.

Mitigation

Measures to minimize worker safety hazards are incorporated in the project design and are described in detail above. In general, these measures include development of a standard set of procedures for employees consisting of detailed job and operation descriptions, identification of safety equipment and procedures, training, and emergency response procedures. Other worker safety measures include the use of protective equipment, rotation of worker assignments, and worker supervision. County health department inspectors would be present on-site on a regular basis to ensure safe operating conditions.

Significance After Mitigation

The project planning and response measures outlined above would provide adequate mitigation for the potential effect on worker safety and would reduce impacts to below a level of significance.

b. Reduced Landfill Operations Alternative

Impacts

The potential effects and response measures within this alternative would be identical with those of the project as proposed.

Mitigation

Mitigation would be identical with the proposed action alternative.

Significance After Mitigation

The measures provided for the proposed action alternative would adequately reduce worker safety impacts to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

This alternative would involve a slightly less intense level of activity at the container handling yard and at the working face of the landfill (handling 16,000 tons per day, instead of 20,000). To this extent, it may represent a slightly safer workplace environment, but the difference would be negligible. This is because the same potential hazards would be present and the need for proper planning, employee training, safety equipment and procedures, and so on would be identical with the proposed action.

Mitigation

Mitigation is the same as identified for the proposed action alternative.

Significance After Mitigation

The measures provide for the proposed action alternative would adequately reduce worker safety impacts to below a level of significance.

d. No Action Alternative

Impacts

The potential worker safety effects at Eagle Mountain would be avoided under this alternative. Identical exposures and hazards would continue at conventional landfills, but these may pose a slightly lower degree of risk. This is because conventional landfills usually handle a smaller volume of solid waste per day and do not require the coordination among a larger number of heavy equipment items as in the proposed action.

Mitigation

No mitigation is required.

Significance After Mitigation

Impacts to worker safety are considered potentially significant under the No Action alternative.

6. Public Safety

Assumption and Assessment Guidelines. The major concern for this issue is the risk accidental spillage of nonhazardous compacted municipal waste poses to public health and safety. Accidents involving container vehicles transporting solid waste material to off-site transfer stations or the landfill site could potentially expose the public to nonhazardous materials. Any risk to public health or safety posed by the accidental spillage of waste would be considered a significant impact.

a. Proposed Action

Impacts

The project itself and the operation of off-site transfer stations to serve the project would not be expected to increase the frequency of accidents involving solid waste transport, when considered in terms of accidents per ton-mile of transport. The emphasis on rail transport would tend to decrease the overall potential for accidents when compared with conventional truck transport of the same amount of solid waste due to the control and maintain rights-of-way in which trains operate. The greater distances to the project site, however, would also tend to increase the accident potential. Accidents must be expected to occur, however, and when they do they would expose the public to any conditions presented by the compacted solid waste.

The major impact of spilled refuse is aesthetic. While there may be sharp objects, broken glass, very small amounts of hazardous substances, and other hazards associated with accidental spills of refuse, these would be confined to a relatively small area. The appearance of spilled refuse is quite unsightly and odors from the refuse may be noticeable, but the material itself presents only minimal hazard to people—a much less hazard than spilled gasoline, flammable or toxic gases, or other chemicals, all of which are commonly transported by trucks and trains. Screening for hazardous wastes at transfer stations would reduce the potential exposure to small quantities of hazardous wastes in the municipal refuse.

Solid waste materials would be transported from the transfer station to the landfill site via rail in closed intermodal transport containers. This procedure would present a health hazard due to an accident only if the containers broke open and spillage occurred. The hazard would exist until the spilled material was removed. In the event an accident occurs along either the Southern Pacific or the Eagle Mountain rail line, the clean-up time would delay the passage of subsequent trains and potentially interrupt the transport of solid waste. The same type of delay would

occur with a non-railroad incident, such as an earthquake or flood which washes out a portion of the track.

Hazardous wastes derived from the landfill operation may include paints, fuel oil, and solvents from the maintenance activities; the organic phases from leachate or landfill gas condensate; and small quantities of hazardous materials recovered from the on-site waste inspection facility. These wastes will be periodically removed from the site for delivery to a licensed hazardous waste facility. Transportation of these wastes will be by licensed hazardous waste carriers under manifest as required by state law. Wastes will be segregated and containerized as required by regulations.

Emergency response plans to address major accidents on roadways and rail lines are already in place at the local government level, as part of federal and statewide programs. As a regular carrier of hazardous materials (not including the municipal waste transport proposed by the project), the Southern Pacific rail company is required by state law to have contingency plans in place to respond to spills or accidents. Materials commonly transported by rail along the Southern Pacific line include a variety of petroleum products and flammable liquids, chlorine gas, and other explosive or corrosive substances. Emergency response plans for accidents involving such materials, typically involve the assignment of an emergency response coordinator; the maintenance of equipment to contain and clean up any spilled material; procedures and information for notifying local fire departments, health departments, and other officials involved with public safety; retention of outside contractors to clean up certain types of releases; and other measures. This plan would be implemented by Southern Pacific, its customers who own the materials being transported, the local fire department in the jurisdiction where an accident occurs, and the Riverside County Department of Health, Hazardous Materials Unit. These existing plans should be more than capable of responding to the accidental spillage of nonhazardous compacted municipal waste.

As part of their own emergency response planning, MRC would maintain adequate staff on-site or on call to provide clean-up workers to supplement Southern Pacific workers and to accomplish trash pickup as necessary. This provision, in conjunction with existing response plans, would provide adequate mitigation for the potential increase in accidents.

Rail delivery of refuse to Eagle Mountain is the intended primary means of transportation. It is possible, however, that longer delays in the rail transport system as a result of catastrophic disruption of the rail service could occur. There are several means by which the flow of waste could be handled. There will be a surplus of containers within the system that can be used to load refuse. These could be temporarily stored at the transfer stations or on rail sidings. The maximum length of storage would be limited to a period of time to be established in the emergency response plan that will be approved by the appropriate state or county agency.

Over the life of the project, it is possible that an interruption of rail service might occur as a result of an earthquake, other acts of God, or rail strike. In the event that the rail movement of filled containers is delayed beyond the period permitted, the containers themselves are designed to be used in a variety of transport modes, and they could be shifted from rail transport to truck transport. At full capacity of 20,000 tpd, an additional 650 trucks per day would be required to handle the portion of the refuse normally carried by rail. This additional response would help ensure steady flow of refuse to the Eagle Mountain site or to alternate area landfills depending upon the location of the train disruption. Under emergency conditions, adequate landfill space would be found for deposition of the refuse. It is expected that these occurrences would be infrequent and of short duration; therefore, impacts (noise, air quality, traffic, public safety) would not be significant.

The additional impacts on traffic, air quality, fuel consumption, or other areas can only be determined by assuming specific locations of the rail disruption. Repair of the rail service and resumption of transport by rail at the earliest possible time would, of course, obtain the highest priority.

The railroad right-of-way grant would include the repair and maintenance of the currently unused railroad and the construction of a new railroad spur entering the Phase II container handling yard. The Eagle Mountain Road right-of-way grant would entail the repair and maintenance of a portion of the presently washed out truck road. Maintenance of the rail and road rights-of-way would have a positive impact on the potential for public exposure to nonhazardous waste materials resulting from truck and rail accidents.

The land exchange, consisting of private and public lands, would have no impact on public safety.

Mitigation

The project incorporates measures to minimize public safety impacts such as providing available staff to assist in the removal of spilled waste in the event of an accident. The discretionary actions covered by this draft EIS/EIR do not directly establish conditions for the transfer stations, but the planning measures noted reflect what has been proposed and what would typically be expected in a solid waste facilities permit for a transfer station.

Significance After Mitigation

Implementation of the project design would reduce public safety impacts due to accidental spillage of municipal solid waste to below a level of significance.

b. Reduced Landfill Operations Alternative

Impacts

The possible reduction in the extent of the landfill perimeter would not affect the daily operation of the facility. However, the slight reduction in truck and rail traffic to the site under this alternative would have an incremental decrease in the potential occurrence of truck and rail accidents. The potential impacts to public safety would subsequently have an incremental decrease compared to the proposed action.

Mitigation

Mitigation measures would be the same as with the proposed action.

Significance After Mitigation

This alternative incorporates measures to reduce any potential impacts to public health and safety due to accidental spillage to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

To the extent that truck transport has a higher potential accident frequency than rail transport, this alternative would provide a theoretically safer system. The relatively low hazard posed by accidents, however, and the response capabilities proposed within the project greatly reduce this possible advantage. On the other hand, this alternative would eliminate or reduce greatly the flexibility of the project to respond to interruptions in the availability of rail service. If the container handling yard is designed in a way that does not provide for truck delivery, it would be more difficult to accommodate delays in rail transport caused by accidents or other events.

Mitigation

Mitigation measures would be the same as for the proposed action. Also, the container handling yard would be designed to handle trucks in an emergency.

Significance After Mitigation

This alternative incorporates measures to reduce any potential impacts to public health and safety due to accidental spillage to below a level of significance.

d. No Action Alternative

Impacts

This alternative would avoid any increase in accident potential related to rail and truck transport of solid waste to Eagle Mountain. The increased reliance on local landfill disposal capacity under this alternative would essentially transfer these risks to the more populated regions in the vicinity of existing landfills, thus increasing the population exposure to these risks. Also, as noted above, truck transport has higher potential accident frequency than rail transport. The shorter haul distances involved, however, may result in somewhat fewer accidents.

Under the No Action alternative, modifications to the existing site would not occur. Public access to the unused facilities could cause potential public safety hazards, including exposure to unstable slopes, deep pits, and falling objects. These public safety impacts are considered potentially significant.

Mitigation

No mitigation is required.

Significance After Mitigation

The potential for public safety hazards to occur from the proposed action would not exist, although exposure to the abandoned mining facilities represents a potential significant impact to public safety with no opportunity for mitigation.

C. Traffic and Transportation

The landfill construction and operations, the BLM/Kaiser Steel Resources, Inc., land exchange, the Eagle Mountain rail line and Eagle Mountain Road Extension right-of-way grants, and Riverside County Plan Amendment would not have any significant impacts on traffic and transportation. The following discussion provides a detailed evaluation of the effect of the proposed action on rail operations, at-grade crossings, truck traffic on surface streets, and transfer stations.

1. Rail Operations

Assumptions and Assessment Guidelines. The proposed Eagle Mountain landfill is expected to begin operations in the early 1990s, but it will not be operating at full capacity until at least 1995. The project impacts analysis focuses on 1995, as this is the earliest date at which the full impacts of the project will occur. Conflicts between ongoing regional rail operations and trains serving the landfill would represent a significant impact.

a. Proposed Action

Impact

Existing train traffic volumes in the study area range from less than 10 trains daily to 50 trains per day in the vicinity of Colton. Train traffic along the primary segment, Segment 1 from Eagle Mountain through the Coachella Valley to the Colton Yard/San Bernardino transfer station, ranges from 28 to 50 trains per day, with a median average of 35 trains per day. Train traffic along the secondary segments tended to be significantly lower, ranging from 2 to 35 trains per day.

As part of the development of the Phase I container handling yard, the entire length of the Eagle Mountain rail line right-of-way must be reviewed and granted under current FLPMA, Title V (43 U.S.C. 1761 et seq.) procedures. As shown on Figure 12, a new FLPMA right-of-way would be issued over the entire length of the existing, legislatively approved Eagle Mountain rail line right-of-way from Eagle Mountain to Ferrum Junction.

All trains would switch from the main line to the Eagle Mountain spur at Ferrum Junction. The junction at Ferrum was designed to provide for the transfer of ore trains of similar length from the Eagle Mountain spur line to the Southern Pacific main line. No operational or scheduling problems are expected as a result of switching operations at Ferrum Junction.

The proposed action is expected to be capable of accepting up to six unit trains per day at the container handling yard. To transport the amounts of solid waste from the geographic areas

assumed for the analysis, an average of 4.7 shipments per day will be required when the project is operating at full capacity. Based on this description and counting return trips for the trains, an average of 9.4 trains per day will utilize the primary rail segment (with a maximum number of 12 trains per day on a round-trip basis), with fewer trains on each of the secondary segments. Proponents of the proposed action will arrange scheduling of refuse unit trains with Southern Pacific on a contractual basis to prevent any conflict between ongoing rail operations and trains being utilized for the landfill project. Because the volume of rail traffic on the rail lines studied is expected to remain fairly static, at least through 1995, the project-related usage of rail transport is expected to have an insignificant impact on the rail lines and surrounding infrastructure (Kava, 1/1/90).

The offered lands are crossed by or adjacent to the Eagle Mountain rail line. Because these lands are privately owned, a right-of-way grant was not previously required. However, the exchange of the land to BLM ownership would necessitate a railroad right-of-way grant.

Mitigation

No significant impacts have been identified for rail operations under this alternative. However, to avoid potential conflicts between ongoing Southern Pacific rail operations and trains being utilized for the landfill project, refuse-transporting trains will be scheduled by project proponents. No additional mitigation is required.

Significance After Mitigation

The impact of the proposed action to existing rail operations is considered insignificant.

b. Reduced Landfill Operations Alternative

Impact

The reduced landfill operations alternative proposes transporting 14,000 tpd by rail and 2,000 tpd by truck of waste materials from refuse collection routes to a network of truck and rail transfer stations. The truck transfer station would be located in either Riverside or San Bernardino County, approximately 75 miles from the landfill. Because this is a slightly smaller volume of rail traffic, the impact to existing rail operations would be less than the proposed action's and would remain not significant.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

This alternative's impact to existing rail operations is not significant.

c. Proposed Action with Rail Access Only Alternative

Impact

The effects of this alternative would be identical with the reduced landfill operations alternative.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

This alternative's impact to existing rail operations is not significant.

d. No Action Alternative

Impact

Under the No Action alternative, all impacts would be avoided.

Mitigation

None is required.

Significance After Mitigation

No impacts would occur with this alternative.

2. At-Grade Crossings

Assumptions and Assessment Guidelines. The shipments from each transfer station would use one or more of the rail segments previously identified to reach the landfill. Each shipment to the landfill would necessitate two one-way train trips. A shipment of full containers to the site and a return train delivering empty containers for reuse at the transfer station would both be required. This additional train traffic will add to the total daily delay of automobile and truck traffic at at-grade crossings. In assessing the significance of vehicle delay times from the proposed action, this draft EIS/EIR compares system delay totals with single crossing delays at other crossings in the Southland. A hazard index measures the safety at each at-grade

crossing. Any substantial delays or increased hazard in automobile and truck traffic at at-grading crossings due to the proposed action would be considered a significant impact.

a. Proposed Action

Impact

An average of 9.4 trains per day will utilize the primary rail segment, with fewer trains on each of the secondary segments. Along the primary segment, the total daily delay adding all of the crossing delays together caused by the passage of these trains on the primary segment will be approximately 11 vehicle hours. The maximum average delay at any one grade crossing along this segment would be between one and two minutes.

Along the secondary segments, the total vehicle delay time caused by the project would be greater, due to the larger number of crossings, the larger traffic volumes, and the generally slower train speeds in the urban areas. The cumulative total of all delays in the secondary segments would be approximately 78 vehicle hours per day. The delays associated with the individual processing and transfer stations would range from 1.39 vehicle hours (San Bernardino County) to 47.65 hours (Orange County).

In assessing the significance of vehicle delay times from potential rail haul waste disposal projects, SCAG compared system delay totals, such as those noted above, with single crossing delays of up to 100 to 300 hours on major arterials near the ports of Los Angeles and Long Beach. For another comparison, on typical arterial intersections with 20,000 daily vehicles on each street, typical stoplight delays amount to 300 vehicle hours per day. On the basis of these comparisons, SCAG characterized the delays caused by trains at grade crossings as "relatively minor" (SCAG 1988:8-4). The effects on delays at grade crossings caused by the Eagle Mountain project would be similar. Because the delays are not substantial, they are not considered a significant impact.

The overall effect of the project on the hazard indices of the at-grade crossings is to increase the values by 10 to 30 percent, without significantly altering the overall rankings of the various at-grade crossings. The reason no major change in the overall rankings of the various at-grade crossings occurs is that the net increases in train traffic resulting from the project, while different for the various rail segments analyzed, tend to be proportional to the expected baseline train traffic on each segment. The forecast increase in background highway traffic volumes between 1989 and 1995 has a much greater effect on the calculated hazard indices for the at-grade crossings analyzed than the project-related increase in train traffic. In a similar manner, yearly fluctuations in train activity also cause changes in the calculated hazard indices. For these reasons, the effect of the project on safety at crossings with surface streets is not considered a significant impact.

To assess the potential hazard for the new crossing proposed on Kaiser Road when the new spur is constructed to serve the Phase II container handling yard, the hazard index for this location was calculated using the future traffic volumes with the project and the full volume of train traffic from the project (see Figure 13). Even with the minimum protection improvements possible (warning signs only), the hazard index at this location would be low when compared with many other typical crossings, so the potential hazard impact at this location would not be significant.

Unlike highway analysis, there is an absence of widely-recognized standards related to the identification of deficiencies in rail operations or safety. The PUC has been contacted regarding this matter, as they are responsible for administering the program related to at-grade crossing improvements. This program is known as the Federal Grade Crossing Program or Section 130 Program. The PUC indicated that adding an increment of five to seven new round trips to a line already carrying 50 trains daily would not cause a significant transportation impact in their eyes, as long as the Southern Pacific did not have any scheduling problems (the Southern Pacific has been contacted and does not foresee any scheduling problems).

In summary, the project-related usage of rail transport is expected to have a minimal effect on the rail lines and surrounding infrastructure. Capacity within the rail system will be available to accommodate the number of shipments made to the landfill. In terms of the number and length of trains involved, the project is similar to the previous rail operations between Eagle Mountain and the Kaiser Steel plant at Fontana. Its overall effect would be similar to that rail transport activity which was suspended in 1983. When operating at maximum daily capacity, the project will average 4.7 shipments of refuse per day, totaling 9.4 trains on a round-trip basis. Throughout the entire transportation system, a total of approximately 78 hours of delay is expected on an average daily basis to vehicles encountering refuse unit trains when using at-grade crossings. Most of this delay would occur on the rail segment servicing northern Orange County, where a combination of high traffic volumes and low train speeds result in much higher delays than along other rail segments. The project is not expected to have a significant impact on safety within the study area, nor will the project significantly affect the ranking of crossings along the primary analysis segment when compared to other crossings included in the safety analysis.

To minimize traffic conflicts, trains would be scheduled to begin their runs starting from the western or southernmost transfer station very late at night, at approximately 11:30 P.M. As the train moved eastward, it would proceed through Banning Pass. Once at Ferrum Junction, cars would be left on the siding to be hauled to Eagle Mountain by MRC locomotives.

Although the safety hazard anticipated at the railroad crossing proposed along Kaiser Road is relatively small, the presence of school children nearby makes the installation of flashing lights at this proposed at-grade crossing highly desirable. MRC will install flashing lights at this location making it one of the lowest-hazard at-grade crossings analyzed.

Mitigation

The impacts of the proposed action to at-grade crossings is considered insignificant, and thus, no mitigation is necessary. However, measures to further ensure the safety of the at-grade crossings such as the installation of flashing lights at rail crossings and scheduling late-hour departures from the western or southernmost transfer stations will be implemented.

Significance After Mitigation

The impact of the proposed action on at-grade rail crossings is considered below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

The reduced landfill operations alternative proposes transporting 14,000 tpd by rail and 2,000 tpd by truck of waste materials from refuse collection routes to a network of truck and rail transfer stations. Because this is a slightly smaller volume of rail traffic, the impact to existing rail operations would be incrementally less than the proposed action's and would not be significant.

Mitigation

Mitigation measures identified for the proposed action would apply to this alternative as well.

Significance After Mitigation

This alternative's impact to at-grade rail crossings is not significant.

c. Proposed Action with Rail Access Only Alternative

Impact

The effects of this alternative would be identical with the reduced landfill operations alternative.

Mitigation

Mitigation measures for this alternative would be the same as identified for the proposed action.

Significance After Mitigation

This alternative's impact to at-grade rail crossings is not significant.

d. No Action Alternative

Impact

Under the No Action alternative, all impacts would be avoided.

Mitigation

None is required.

Significance After Mitigation

No impacts would occur with this alternative.

3. Truck Traffic on Surface Streets

Assumptions and Assessment Guidelines. The proposed landfill will impact the highway system in two primary ways. Approximately 20 percent of the waste delivered to the site will be transported via truck, and the project will also generate new employment at Eagle Mountain, both of which have the potential to impact the highway system adversely in the vicinity of the project. For traffic, significant impacts are defined as landfill-related traffic volumes that cause peak-hour or daily average level of service to decrease by one or more levels.

a. Proposed Action

Impact

Approximately 200 one-way truck shipments per day would be required to deliver the 4,000 tons of refuse anticipated to be delivered to the landfill in intermodal transfer containers or long-haul transfer trucks. The number of truck trips each day is based on the capacity of the intermodal containers that will be used to transport the refuse (20 tons per container) and the amount of waste that is expected to arrive via this mode each day (4,000 tons). It is anticipated that half of this truck-transported waste will come from within Riverside County and the other half from San Bernardino County.

The trucks could arrive at any time of the day, as the container handling yard will be operational 24 hours a day. This would result in an average of just over eight shipments arriving each hour. A more conservative scenario would be the arrival of truck shipments during daylight hours

only (12 to 13 hours daily). An average of 16 shipments arriving each hour results from this more conservative assumption. All trucks would be required to use the Eagle Mountain Road Extension via Eagle Mountain Road under normal circumstances for shipment delivery.

The daily traffic volume related to traffic other than the trucks delivering refuse to the site would be slightly less than 500 total daily trips, or 250 inbound and 250 outbound trips. Based on relative population densities, it is estimated that 85 percent of the trips will be to and from the west, while 10 percent of the trips will have origins or destinations to the east and 5 percent travel to and from the north on Desert Center Rice Road. These trips would include both employee travel to and from work and trips made by delivery vehicles, service vehicles, and other traffic to and from the site.

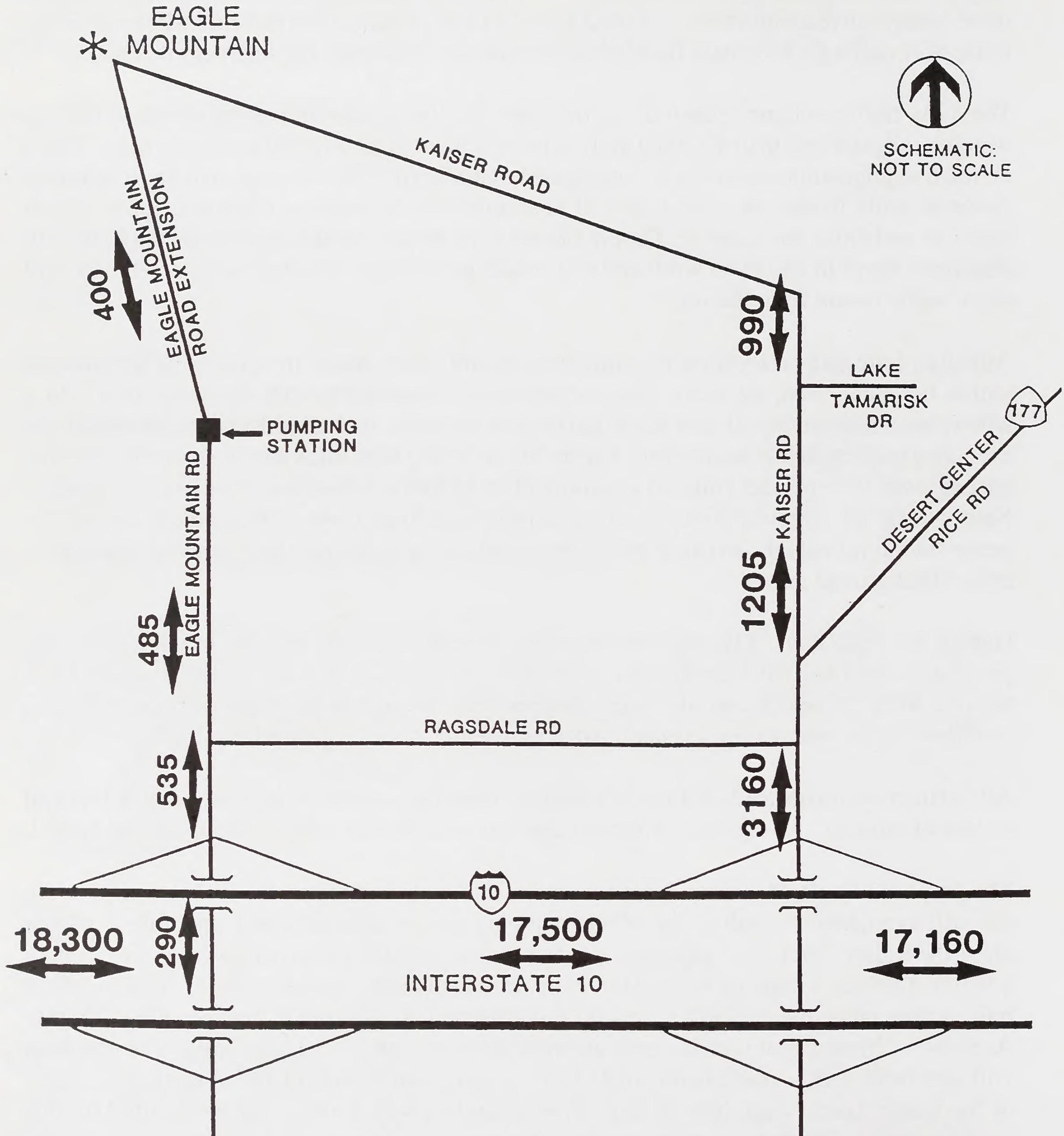
Although long-term relocation of employees would likely result in some trips terminating within the study area, all traffic was conservatively assumed to exit the study area. As a worst-case assumption, all non-truck traffic was assigned to Kaiser Road, maximizing the estimated impacts to this public road. Figure 78, including both truck and other traffic, presents the expected 1995 project buildout condition of daily traffic volumes on study area roadways. Note that the 85 vehicle difference on Eagle Mountain Road north of Ragsdale Road and the pump station reflects the existing traffic observed (65 vehicles per day) factored upwards to reflect background growth.

During the peak hour, 116 trips are expected to enter and exit the site in addition to the previously described truck trips related to the delivery of refuse. A total of 81 trips would leave the site, while 35 vehicles would be entering the site. No significant degradation in operating conditions at the intersections is anticipated as a result of the project-related traffic.

All traffic movements analyzed would continue to operate at LOS A, with minimal delays and no lack of capacity. No significant impacts due to truck traffic on surface streets are anticipated.

The proposed Eagle Mountain Road Extension that would accommodate truck traffic to the site will extend from south of the MWD pumping station approximately one mile northeast along the Kaiser Truck Trail alignment. Then the new road will travel northwest approximately 3,000 feet to near where the Eagle Mountain rail line diverges northwest away from the truck trail. At that point, the road will follow the rail alignment to near where it crosses the California Aqueduct. This segment is in disrepair and would require substantial upgrading. The new road will then head north to the existing main haul road at the mine site, abandoning the remainder of the Kaiser Truck Trail right-of-way. A new right-of-way grant would be required for this road segment. The distance from the pumping station to the proposed permanent container handling yard is approximately 5.4 miles.

The expected impact of the truck traffic associated with the project on I-10 is minimal. A total of 200 round trips on I-10 represents a two percent increase in the overall daily traffic volume



SOURCE: DKS ASSOCIATES, 1990

FIGURE 78. FORECAST 1995 DAILY TRAFFIC WITH PROJECT

RECON

in the immediate vicinity of the project and a much smaller percentage as traffic volumes on I-10 increase to the west. It is expected that this very minimal increase in truck activity would not impact significantly either weigh stations or rest areas.

The extremely high reserve capacity under existing and projected future conditions at the Eagle Mountain Road exit ramp of I-10 indicates that projected traffic volumes could be 2,000 percent higher before the level of service would degrade to LOS B.

The Eagle Mountain Road Extension will create a new intersection at Kaiser Road. Relative to its capacity, this intersection will carry few vehicles and it could be configured in several different ways. The optimal configuration would be construction as a two-way stop, with the stop signs placed on the lower-volume legs of the intersection, that being Kaiser Road. The traffic volumes on all approaches to this intersection are low enough that the stop signs could instead be placed on the Eagle Mountain Road Extension or the intersection could even be configured as a four-way stop, with stop signs on all four approaches to the intersection. A single truck every two minutes on average is well within the acceptable range for a four-way stop controlled intersection. Regardless of the configuration, LOS A operating conditions would result. Installation of a traffic signal would not be warranted per guidelines developed by Caltrans and is therefore not recommended. No significant impact to existing traffic is anticipated.

Washouts are discussed in the drainage section of this draft EIS/EIR.

Over the life of the project, it is possible that an interruption of rail service might occur as a result of an earthquake, other acts of God, or rail strike. In these cases, it is anticipated that the inability to deliver refuse by rail would be covered by trucks until rail service can be restored. It is expected that such occurrences would be infrequent and of short duration; therefore, the impacts would not be significant.

Mitigation

Degradation of street surfaces due to the weight of trucks carrying refuse loads would be mitigated by County maintenance of Eagle Mountain Road funded by revenue generated by the proposed action on a fair-share basis. The precise improvement and paving configurations will be determined by the County Transportation Department and established as conditions within the landfill specific plan.

Significance After Mitigation

The mitigation measures discussed above lower the proposed action's truck traffic impact on surface streets to below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

The reduced landfill operations alternative proposes transporting 14,000 tpd by rail and 2,000 tpd by truck of waste materials from refuse collection routes to a network of truck and rail transfer stations. Because this is a smaller volume of truck traffic, the impact to surface streets would be less than the proposed action's and would not be significant.

Mitigation

Mitigation is the same as the proposed action.

Significance After Mitigation

This alternative's impact to surface streets would be lowered to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impact

The effects of this alternative would be to eliminate all truck traffic, thereby eliminating any truck impacts to surface streets.

Mitigation

No mitigation would be required.

Significance After Mitigation

This alternative eliminates all truck traffic impact to surface streets; thus, impacts would not be significant.

d. No Action Alternative

Impact

Under the No Action alternative, all impacts would be avoided; however, an increase in truck traffic impacts could occur at other disposal sites within the region.

Mitigation

None is required.

Significance After Mitigation

No impacts would occur with this alternative.

4. Transfer Stations

A total of six transfer stations was identified to serve as locations where refuse would be consolidated and loaded into containers for delivery to the site. These processing and transfer stations are not directly a part of the project but were selected in order to allow the analysis of indirect traffic impacts. They are not analyzed in this report.

D. Air Quality

1. Emissions

Assumptions and Assessment Guidelines. Air quality impacts associated with the project are due to emissions from the following sources:

- Construction and site preparation operations
- Transfer stations
- Solid waste transport
- On-site material handling (except fugitive dust)
- Landfill gas generation and combustion
- Fugitive dust

Emissions from each of the categories of sources were estimated on both a maximum daily and annual basis. Worst-case emission rates were used to avoid underestimating impacts from the project. These emission rates were chosen as representative of currently permittable technology and from test data from similar units in operation. For the train haul scenario, for example, current fuel use and emission data for the Southern Pacific locomotive fleet were obtained, and grade-specific factors were generated through information received from Southern Pacific. Manufacturer test data were gathered from General Electric's files for the locomotives formerly used by Kaiser, and specific fuel factors were computed from analyses of the grade profile from Ferrum Junction to Eagle Mountain. For the landfill gas flares, emission and equipment data from seven landfills tested by the South Coast Air Quality Management District were used to determine average emission rates for similar equipment design. Within the range of dust factors published by the Environmental Protection Agency in AP-42 and various research reports, values at the high end of those considered representative of on-site material and proposed processes were chosen.

There are no generally adopted criteria to define the significance of impacts from emissions associated with a project. Appendix E (Sierra Research 1990:61-69) reviews several approaches to assessing significance. One approach is to accept criteria used for the evaluation of industrial sources of pollution, prior to issuing permits to construct or operate, which rely on the comparison of potential emissions increases to established emissions thresholds. The problem with this approach is that the criteria have been developed for the regulation of point sources of pollution that are subject to direct regulations and permit requirements. Emissions from the project, however, originate primarily from vehicles or mobile equipment sources that are not subject to the point source regulations. Nevertheless, the criteria used for evaluating industrial point sources were used to evaluate the current project.

Appendix E (tables 14-18) reviews the regulatory criteria and thresholds used to evaluate industrial sources. For example, in the areas regulated by the SCAQMD, any new point source emissions are subject to best available control technology (BACT) and emissions above certain thresholds are also required to obtain "offsets," or emission reductions elsewhere in the basin. Table 24 presents some typical regulatory criteria for point sources. Appendix E contains a more thorough tabulation of these thresholds.

a. Proposed Action

Impact

Emissions from the proposed action will be associated with a number of activities. These activities will occur both off-site, such as the operation of urban transfer stations, and on-site, including all of the operations at the Eagle Mountain site. While the off-site emissions are not directly caused by or permitted by the project itself, they are indirectly related to it and are discussed here for that reason. Emissions will involve both stationary sources, such as the landfill gas flares, and mobile equipment, such as the trains hauling waste. By emission type, project sources can be grouped into four classes: motor vehicles, fugitive dust sources, fugitive vapor sources, and stationary combustion sources. Motor vehicles include train locomotives, on-highway haul trucks, and off-highway highway equipment. Fugitive dust sources include short-term construction activities, landfill road use, mine tailing reclamation, and solid waste covering. Fugitive vapor sources include the landfill, and stationary combustion sources include the landfill gas flares.

Motor vehicles will generate "tailpipe" emissions and, in the case of on-site vehicles, fugitive dust from unpaved roads and cover material handling. Processing of daily cover material will produce particulate emissions as ore tailing are reclaimed by screening and crushing. As the refuse begins to decompose, gas will be generated by the anaerobic activity in the landfill. The gas will consist primarily of methane and carbon dioxide with trace concentrations of other substances either produced by the bacterial activity or evaporated from materials disposed of in the landfill. The gas will be collected through a series of underground pipes and will be disposed of by external combustion. The burning of the landfill gas will result in the production of combustion emissions.

Total project emissions from all sources at maximum projected operating levels are shown in Table 25. The emissions are reported in terms of pounds per day and tons per year. These emission levels include controls that the project must incorporate in order to comply with current SCAQMD and EPA emission standards. Each of these sources is discussed in more detail below, in paragraphs that are organized by operations or activities associated with the project.

TABLE 24
SAMPLE THRESHOLDS BASED ON EMISSIONS FOR POINT SOURCE REGULATION

Agency and Regulation	HC	NO_x	CO	SO_2	PM10
SCAQMD BACT required (lbs./day)	0	0	0	0	0
SCAQMD offsets required (lbs./day)	75	100	550	150	150
SCAQMD/EPA definition of major stationary source					
NSR procedures (tons/yr.)	100	100	100	100	100
PSD procedures (tons/yr.)	25	25	25	25	25
SCAQMD definition of sig. emission increase					
PSD procedures	25	25	25	25	15

SOURCE: Sierra Research 1990:Tables 14-18.

BACT = Best Available Control Technology
NSR = New Source Review
PSD = Prevention of Significant Deterioration

TABLE 25
TOTAL PROJECT AIR EMISSIONS AT
MAXIMUM OPERATION WITHOUT MITIGATION

Activity	Pounds/Day					Tons/Year				
	NOx	CO	PM10	VOC	SO2	NOx	CO	PM10	VOC	SO2
Off-site Sources										
Transfer stations	1,780	539	192	162	221	325	98	35	30	40
Trains	10,881	4,399	306	990	1,520	1,986	803	56	181	277
On-Highway Trucks	1,035	489	151	162	212	189	89	27	29	39
Subtotal, Off-site	13,696	5,427	649	1,314	1,953	2,500	990	118	240	356
On-site Sources										
On-site vehicle exhaust	2,821	946	210	167	291	515	173	38	30	53
On-site fugitive dust			766					140		
Landfill gas flares	1,182	816	676	845	310	216	149	123	154	57
Subtotal, On-site	4,003	1,762	1,652	1,012	601	731	322	301	184	110
TOTAL	17,699	7,189	2,301	2,326	2,554	3,231	1,312	419	424	466

SOURCE: Sierra Research 1990:Table 28 (see Appendix E).

Construction Operations. Temporary emissions will be produced during the construction of project facilities. At both on-site and off-site locations, fugitive dust and construction equipment exhaust will be generated. As these emissions will be temporary and, for fugitive dust, readily controllable, they are not considered to be significant.

Some new transfer stations processing and shipping solid waste may be constructed in the SCAB. These sites may require demolition of existing structures, excavation for new foundations, and disturbance of soil areas during construction. Fugitive dust and exhaust emissions from construction equipment will be generated. Soil that is carried out of construction sites and dropped onto paved roads will generate fugitive dust as it is pulverized by vehicle tires and suspended by the air turbulence created by moving vehicles.

In developing the Eagle Mountain facility for the long-term handling of solid waste, a new container handling yard, rail spur, and access road will be constructed. All three facilities will require the placement of significant quantities of structural base aggregate due to the low carrying capacity of desert soils at the site. The transfer and placement of native and imported aggregate will generate fugitive dust and vehicle exhaust emissions for a limited period of time.

Solid waste will be transported from the container handling yard to the active face of the landfill over an internal road system. Portions of this system will be paved, while other portions would have surfaces of packed gravel. Initial construction of this road system will generate fugitive dust and vehicle exhaust emissions for a limited period of time. During the life of the project, the internal road system leading to the working face of the landfill will be periodically moved and reconstructed as the landfill surface rises to cover the roads. Emissions from initial construction were not quantified since they would be short-term in nature and are not considered significant. The emissions from road reconstruction during the life of the project, however, will contribute to total on-site impacts during operation. The fugitive dust emission from this ongoing road maintenance and reconstruction is included within the impacts discussion below.

To periodically check the quality of groundwater under the landfill, monitoring wells will be drilled at the commencement of project operations. Prior to drilling, fugitive dust and exhaust emissions will be generated as a crawler tractor levels pads and the drills are moved into place. During initial drilling of each hole, some dust will be generated as the drill cuts into soil within the first three to five feet below the surface. Fugitive dust and exhaust emissions will also be generated during the construction of the pipelines used to transport leachate to a wastewater pretreatment plant. These construction activities generating fugitive dust and exhaust emissions will involve excavation for project components and disturbance of soil areas from the passage of construction equipment.

To minimize the quantity of rainwater run-on, a network of ditches and pipelines will capture and divert storm water falling in and around the landfill. Construction of this system will

generate fugitive dust and exhaust emissions for a limited period of time. During the life of the project, surface ditches will require periodic maintenance to remove sloughed material. Although emissions from initial construction were not quantified, the emissions from maintenance will contribute to total on-site impacts during peak operation and are included within estimates of total fugitive dust from the project.

Prior to project startup, on-site facilities for the inspection of solid waste and storage of recycled components will be constructed. Construction of these facilities will generate fugitive dust and exhaust emissions for a limited period of time.

To comply with South Coast Air Quality Management District Rule 403, standard dust control measures such as prewatering will be used to minimize fugitive dust generated from each of the activities listed above. Water will be obtained from existing wells located at the project site. Control effectiveness will be monitored visually by district inspectors and project supervisors. The application of water to traveled surfaces and exposed soil will be adjusted to maintain very low levels of visible emissions without creating mud. Mud carried off-site and deposited on paved roads will produce fugitive dust when dry.

To summarize, vehicle emissions and fugitive dust associated with short-term construction activities are not considered significant, and no attempt has been made to quantify them. Emissions resulting from ongoing maintenance activities, however, would contribute to the overall emissions of the project and these are included within estimates of the project impacts.

Transfer Stations. During project operation, urban transfer stations will be used to segregate recyclables and hazardous materials and to compact waste components. Refuse destined for recycling may be temporarily stored on-site and periodically shipped to processors. When market demand is low for such materials, recyclables may be shipped to Eagle Mountain. Nonrecyclable waste will be shipped from the transfer stations by rail for ultimate disposal at Eagle Mountain. Each transfer station will be served directly by a rail spur or be located near one. Containerized waste will be transferred by truck to railheads from those stations not directly served by rail.

Emissions are generated at the transfer stations by the operation of on-site vehicles. Diesel-powered construction equipment will be used to load separated waste into compactors, load filled containers onto trucks or railcars, and spot railcars for loading. Where rail sidings are separated from transfer stations, truck and trailer combinations will be used to move containers off-site to railcars.

Emissions from transfer stations are only indirectly related to the project; however, they are included within this analysis for the sake of completeness. Reduction of transfer station emissions is outside of the scope of conditions that can be placed on this project; however, agencies approving the transfer stations can impose mitigation measures. The small reductions

which are shown in the mitigation discussion are those that would result from the implementation of anticipated regulatory changes that have not yet taken effect.

Solid Waste Transport. Approximately 80 percent of the solid waste transported to Eagle Mountain will be by train, primarily from the Los Angeles basin, while the remainder will be hauled from central or eastern Riverside County by truck. Both transportation modes will produce exhaust emissions from the combustion of diesel fuel in internal combustion engines.

Southern Pacific will pick up the loaded cars at urban transfer sites and ferry them to a siding near Ferrum Junction, where the Eagle Mountain rail line intersects the main line. Eagle Mountain engines will hook up to the unit trains at Ferrum Junction and transport them to the container handling yard at the landfill facility.

Diesel locomotive emissions vary proportionately with fuel consumption. Fuel consumption is dependent upon the weight of the train being pulled and the vertical grade of the track. Because the transfer station to landfill route carries trains over two passes, fuel consumption and emissions are not constant over each section of the route. Therefore, separate fuel consumption estimates were generated for flat and inclined portions of the route. Also, as locomotives having different emission factors will be used on the Southern Pacific and Eagle Mountain portions of the route, care was taken to apply the appropriate factors to each portion.

It is anticipated that within 75 miles driving distance from the project, the cost of transporting solid waste in containers from transfer stations using tractor-trailers will be less expensive than shipping it by rail. As a result, 200 truck loads per day are anticipated for the project (400 total truck trips, counting the return trips). For purposes of the air quality modeling, it was assumed that 100 trucks will make two trips per day to the project site with 20- to 25-ton loads.

Over the life of the project, it is possible that an interruption of rail service might occur as a result of an earthquake, other acts of God, or rail strike. In these cases, it is anticipated that the inability to deliver refuse by rail would be covered by trucks until rail service can be restored. It is expected that such occurrences would be infrequent and of short duration; therefore, the air quality impact would not be significant.

On-Site Material Handling (except Fugitive Dust). As a category, on-site construction equipment is the largest source of gaseous emissions on the project site. Cumulatively, on-site construction equipment would consume nearly 8,000 gallons of diesel fuel per day. Nearly 30 percent of this fuel would be consumed by the fleet of trucks which will haul containers from the rail line to the landfill face, while the remainder is distributed among five other general categories of operations.

The disposal of 20,000 tons of solid waste in 20- to 25-ton containers will require 800-840 trips by the truck fleet each day between the container handling yard and the active face of the

landfill. Operating during 10 hours of daylight each day, the 34 trucks will each complete a circuit of loading and dumping every 37 minutes.

In the container handling yard, overhead cranes and container handlers will also operate continuously during peak periods. Cranes will transfer loaded waste containers from railcars and tractor-trailers to container haul trucks and empty containers from returning haul trucks back to railcars and tractor-trailers. For purposes of the air quality analysis, it is assumed that all of this transfer equipment will be powered by diesel engines and generate exhaust emissions during operation.

Another area of concentrated mobile source activity will be the landfill face itself. In the area where final waste deposition occurs, 25 units of construction equipment will operate simultaneously under the maximum project conditions. Crawler tractors will distribute dumped waste to shape the fill, while compactors will roll over the graded surface to develop the desired volume reduction of deposited material. After final compaction of waste, crawler tractors will spread and compact a layer of cover material daily, as required by state law.

Prior to the placement of waste in the mine pit, a liner will be installed as a part of the leachate collection system. The composition and structure of the liner will be directed by the County and by the Regional Water Quality Control Board. It is anticipated that the bulk of liner material will be derived from reclaimed fine tailing created during operation of the former iron mine. This material will be excavated by front-end loader from former settling ponds and possibly fed to a wet mixer (pug mill) for blending with bentonite or other clay binder. Exhaust emissions will be produced by the front-end loader in excavating the tailing, by the pug mill mixer in preparing the liner mixture, by a dump truck in transporting the material to the pit, by a crawler tractor in shaping the material into a constant-thickness blanket, and by a compactor in rolling over the blanket to compress it.

The project will also reclaim coarse tailing on-site to produce cover material for the waste. In this operation, a front-end loader will excavate material from storage piles. The product will be transported by dump truck to the landfill face, where it will be spread and compacted.

A separate fleet of vehicles will be used on-site to maintain the roadways used to transport liner, waste, and cover material. Two water trucks will wet roadway surfaces continuously during landfill operations to mitigate fugitive dust emissions and enhance compaction of surface material. As the main roads providing access to the working face of the landfill will be constructed in part on the landfill surface itself, frequent reconstruction will occur as the surface of the fill rises from the bottom of the pit. Graders will be used to apply new courses to road surfaces. All of these vehicles will generate exhaust emissions in the pit area during the life of the project.

In the excavation of ore by the former mining operation, benches were cut into the pit walls to catch falling rocks and to provide temporary roads for mine vehicles. These benches now harbor significant accumulations of loose rock which limit their ability to provide protection from falling rock to work forces in the lower portions of the pit. To regain a measure of safety, a crawler tractor will be used to push the accumulated loose rock off each bench prior to commencing waste disposal in that portion of pit below. Exhaust emissions from this vehicle will be generated during operation.

Landfill Gas Generation and Combustion. Landfill gas will be formed over time as waste decomposes. In the absence of oxygen, hydrocarbon wastes will break down to form predominantly carbon dioxide and methane. Trace quantities of toxic gases will also be formed by these processes. As discussed in the section on public safety, the landfill gas collection system is assumed to capture approximately 80 percent of the gas generated. Captured gas will be piped to a combustion system for incineration. The remainder of the gas will escape the landfill through the cover layers.

The gas combustion system will initially use flares to burn the landfill gas. The flares will be designed to mix the landfill gas with air and burn it in an open-topped chamber. Auxiliary fuel will be added when the energy content of the landfill gas is too low to maintain combustion.

Most of the data existing on the generation rates of landfill gas come from studies conducted in the SCAB. On the basis of this information, it is estimated that the project will generate between 18,000 and 46,000 cubic feet per minute of landfill gas after 35 years of operation. Current research indicates that landfill gas production rates increase with increased precipitation. Thus, because precipitation rates are lower at the project than in the coastal areas where the landfill test data were collected, the gas generation rate for the project is expected to be at the lower end of the range of historical data. In order not to underestimate project impacts, however, the gas flow rate used in this analysis was that at the upper end of this range.

As the generation rate of landfill gases increases with the increasing age of deposited waste, the economics of recovering energy from the combustion of the gas will become more attractive. At some point during the life of the project, an energy recovery system will be substituted for the flares. The earliest date forecast for conversion is 1999; consequently, the project will be applying for permits to use only flares for landfill gas disposal. If a conversion to energy recovery equipment is proposed in the future, the impacts of that system will be the subject of a supplemental environmental review.

Limited data collected from landfill gas flares in the SCAB show criteria pollutant emissions to vary significantly from flare to flare. These variations are most likely due to differences in construction and operation of the flares and to variations in the mixture of gases generated by each landfill. Standards for flare construction adopted by the SCAQMD in recent years and improvements in combustion technology will reduce some of the emission variability in new

flares. In selecting emission factors representative of the flares proposed, data from source tests, SCAQMD regulations, and an equipment manufacturer's guarantee were reviewed.

Trace quantities of toxic gases are contained in landfill gas and will be emitted from the landfill surface and from the gas flares. The data collected by SCAQMD at a number of landfills show concentrations of toxic gases in raw landfill gas to vary widely from site to site. As all of these gases are organic, a sizable fraction of each of them will be incinerated as landfill gas is burned in the flare system. Data from SCAQMD testing indicate that destruction efficiencies in flares for these gases range from 70 percent to over 99 percent, with a majority of tests showing efficiencies above 99.0 percent.

Fugitive Dust. Almost all project activities which involve the use of mobile equipment will generate fugitive dust. Although the solid waste will not be dry enough or have a sufficient fraction of fine material to contribute measurably to particulate emissions, the movement of vehicles over any surface within the project's boundaries will cause air pollution. Material spilled onto paved roads will be ground and suspended by traffic. The surface of unpaved roadways will abrade and become airborne with the passage of vehicles. Fine particles in the fine and coarse tailing will become airborne with the handling of these materials. The overhead cranes in the container handling yard, moving on suspended guideways, are possibly the only items of mobile equipment which will not produce fugitive dust while operating. Although mitigation techniques can significantly reduce particulate emissions from all sources, such emissions cannot be eliminated fully.

The emission rate of fugitive dust from roadway surfaces will be dependent upon a number of roadway and vehicle characteristics. The project would contain both paved and unpaved roads, and vehicles operating within the project would use both types of roadbeds. Research indicates that the mass of fine particles within the loose material on a road surface will be the most significant parameter in the emission equation. This mass tends to be small on paved roads as the asphalt or concrete do not significantly abrade with traffic flow. Instead, the major sources of loose material on paved project road will be material dropped from vehicles previously travelling over bare earth areas, spillage of cover or liner material from haul trucks, tire wear, and dust fallout from nearby sources. In the case of unpaved roads, loose surface material will be generated primarily by the tire friction of passing vehicles on easily eroded soil particles. Material from tire wear, spillage, and dust fallout would also be present on unpaved roads. The grinding action of tire friction will reduce the particle size of loose surface material, whether on paved or unpaved roads, until a point is reached where particles will be readily entrained in the turbulent wakes of passing vehicles.

The characteristics of the passing vehicles will also dictate the amount of PM10 generated with traffic flow. As the entraining forces on surface particles are dependent upon wind velocities generated by passing vehicles, vehicle speed will have a large influence on emission rates. Some surface particles in a vehicle's track will be thrown into the air by the passage of tires

over that portion of the roadway. As a result, the number and size of tires on each vehicle will influence emission rates. The volume of traffic on a road surface will have a direct impact on emission rates over time. Finally, as the grinding action of tires is influenced by the pressure of the tires against a road's surface, the weight of each vehicle will have an influence on its fugitive dust emission rate.

In producing suitable material for pit lining and waste covering operations, fine and coarse tailing will be processed on-site. In the production of pit liner, material will be excavated from former settling ponds by front-end loader. As 90 percent of the fine tailing are silt-sized particles, this activity will generate significant emissions if performed unabated. To comply with South Coast Air Quality Management District Rule 403 (Fugitive Dust), this material will be prewatered with a sprinkler system prior to disturbance. Once mixed, the fine tailing are maintained at a moisture content that will eliminate the emission of fugitive dust during the remainder of handling.

Coarse tailing will similarly constitute most, if not all, of the material needed for waste covering operations. A front-end loader will excavate the tailing from a large storage pile. The material will be loaded into haul trucks by a front-end loader and transported to the working face of the landfill. Dumped cover material will be spread and compacted by crawler tractors.

Although excavated coarse tailing may contain some indigenous moisture, water sprays and other controls may be needed to comply with emission limitations. Dust will be generated at each step of processing. Because of the very low fraction of this material which is smaller than one-eighth inch, and because of its low abrasion tendencies, the overall dusting potential of this material is comparatively low. The federal New Source Performance Standard for nonmetallic mineral processing plants requires low opacity emission levels or wet scrubbers. The South Coast Air Quality Management District BACT guidelines recommends baghouses or wet scrubbers for the control of dust from rock crushing facilities. Sierra Research (1990:104-105) estimates that a cost/benefit analysis will conclude that a baghouse system will be required for control of emissions from the coarse tailing processing system. In complying with this standard, emissions from the cone crushers will be maintained at low levels. Nevertheless, some dust will be emitted in transferring crusher product to the temporary stockpile, to haul trucks, and to a dumping area at the landfill face.

Low levels of dust will be emitted through road maintenance activities. As water trucks travel slowly in a continuous pattern of road sprinkling, fugitive dust emissions from this operation will be much lower than those generated by waste or cover material hauling. Also, as road fill will be watered to enhance compaction as it is applied, and as the process of road buildup will be performed by slow-moving equipment, emissions from this activity will remain low in comparison to other project activities.

One project activity producing uncertain fugitive dust emission levels will be the clearing of natural debris from the pit benches. A crawler tractor will push this material off benches as the landfill face moves along the pit walls. As material free falls off each bench, fine particles in that material will become suspended in the air and contribute to pit emissions. As the content of fine particles in the bench debris is not known, it is difficult to forecast the average level of emissions. In this analysis, the bench clearing emission factor was derived from factors reported for crawler tractors operating in surface coal mines although material at coal mines is known to be softer than at the Eagle Mountain site. This results in an overestimate of expected emissions from this activity. Bench debris could be prewatered by truck using the perimeter road system to reduce dust emissions, and this analysis assumed a control efficiency of 30 percent. Because a sizable fraction of dust generated by the falling debris will fall out within the pit, the emission factor chosen has a built-in margin of safety.

Finally, there will be particulate emissions due to windblown fugitive dust from disturbed areas at times when there is no vehicle activity generating fugitive dust. However, these emissions are expected to be negligible, since most disturbed areas will be in regular use (with fugitive dust emissions accounted for elsewhere) or will be regularly treated or both.

Mitigation Measures

Appendix E (Sierra Research 1990:105-124) includes a thorough discussion of potential mitigation measures and their feasibility. The measures presented below include all feasible measures identified. In the numerical calculations of project impacts, controls required by current regulations have been considered part of the project design and have not been counted as mitigation measures. Measures which are responsive to regulations which have not yet taken effect or which are anticipated in future regulations are presented here, as well as those measures which are beyond current regulatory requirements. Measures which are outside the jurisdiction of the lead agencies are reviewed to address significant cumulative air quality impacts.

Truck Emission Standards. Trucks used to haul solid waste to the transfer stations and trucks used to haul solid waste to the landfill shall comply with all applicable California motor vehicle pollution control regulations. All new trucks used to haul solid waste to the landfill and purchased after the effective date of new, more stringent California motor vehicle pollution control regulations shall comply with those regulations.

Diesel Fuel Quality. Trucks used to haul solid waste to the transfer stations and trucks used to haul solid waste directly to the landfill shall use diesel fuel which complies with all applicable California Air Resources Board regulations for on-highway diesel motor vehicle fuel.

SCAQMD Smoke Enforcement Program. Trucks used to haul solid waste to the transfer stations and trucks used to haul solid waste to the landfill shall be subjected to random checks for excessive smoke by the California Highway Patrol.

California Highway Patrol Diesel Truck Inspection Program. Trucks used to haul solid waste to the transfer stations and trucks used to haul solid waste to the landfill shall be subjected to periodic checks for excessive smoke and emissions control system tampering at California Highway Patrol weight and safety inspection stations.

State Low Emission Vehicle Regulations. Trucks used to haul solid waste to the transfer stations and trucks used to haul solid waste to the landfill shall be low emission vehicles as defined in state regulations, to the extent required by regulations of the California Air Resources Board and the South Coast Air Quality Management District (such as proposed Rule 1601).

Locomotive Operating Procedures. Mine Reclamation Corporation shall ensure that diesel locomotives on the Eagle Mountain railway are shut down when the engines will not be needed for one hour or more. MRC shall ensure that diesel locomotives on the Eagle Mountain railway receive regular preventive maintenance, in accordance with the engine manufacturers' recommendations. This maintenance will include daily visual checks for excessive smoke by the engineers and smoke measurements with an end-of-stack opacity meter of each engine at each scheduled maintenance interval and at each unscheduled maintenance event. Locomotives which are observed to have excessive opacity, in excess of 20 percent, shall be adjusted and/or repaired within three working days of the observation or removed from service. A record of all visual and instrument checks for excessive smoke, as well as associated repairs, shall be maintained by MRC along with the routine maintenance logs for each engine.

Diesel Fuel for Locomotive Operations. All diesel locomotives on the Eagle Mountain railway shall be fueled with diesel fuel which meets the requirements of the ARB for on-highway motor vehicle diesel fuel. MRC shall maintain a record of all diesel fuel purchases which includes a statement by the supplier that the fuel complies with this requirement.

Diesel Locomotive Emission Standards. All diesel locomotive engines purchased for use on the Eagle Mountain railway shall comply with all applicable state and federal emission control requirements.

Electrification of the Eagle Mountain Railway. When landfill gas generation is sufficient to warrant the construction of an energy recovery facility at the project site, MRC shall prepare, or have prepared, a study of the cost/effectiveness of electrifying the Eagle Mountain railway to reduce emissions from locomotive emissions.

Landfill Equipment Operating Procedures. Mine Reclamation Corporation should ensure that equipment operators at the landfill shut down their engines if the equipment will be idle for 15 minutes or longer. MRC should schedule the number of machines and operators to match the anticipated waste volumes and should match the number of container haulers to the container handling capacity to avoid excessive queueing.

MRC should ensure that diesel-fueled equipment at the landfill receive regular preventive maintenance, in accordance with the engine manufacturers' recommendations. This maintenance should include daily visual checks for excessive smoke by the operations or maintenance staff. Equipment which is observed to have excessive opacity, in excess of 20 percent, shall be adjusted and/or repaired within three working days of the observation or be removed from service. A record of all visual and instrument checks for excessive smoke, as well as related repairs, shall be maintained by MRC along with the routine maintenance logs for each item of equipment.

Diesel Fuel for Landfill Equipment. All diesel-fueled equipment at the landfill should be fueled with diesel fuel which meets the requirements of the ARB for on-highway motor vehicle diesel fuel. MRC should maintain a record of all diesel fuel purchases which includes a statement by the supplier that the fuel complies with this requirement.

On-Highway Engines for Landfill Equipment. Prior to purchasing any diesel-fueled equipment for operation at the landfill, MRC shall evaluate the feasibility of purchasing the equipment with engines which are certified by the ARB for use in on-highway trucks. If such engines are available, MRC shall purchase the equipment with equivalent on-highway engines, unless (1) there is no suitable engine available or (2) the mounting and installation requirements, or duty cycle limitations, make it infeasible to use available on-highway engines in that equipment.

Low NOx Engine Design for Landfill Equipment. For any diesel-fueled landfill equipment for which there are no suitable on-highway equivalent engines, MRC shall purchase the equipment with engines which are equipped with turbochargers and intercoolers (or aftercoolers). In addition, MRC should maintain these engines with the fuel injection timing retarded to a level recommended by the engine manufacturer for reduced NOx emissions, but which will not result in excessive visible smoke emissions.

Construction Equipment Emission Standards. Mine Reclamation Corporation shall ensure that all landfill equipment which it purchases complies with all applicable federal and state emission control standards.

Electrification of Landfill Equipment. MRC shall purchase and operate electric versions of as many of the following equipment items as is feasible, in lieu of diesel (or other) fueled versions at the landfill site:

- Container loading/unloading cranes
- Pug mills used for liner material preparation
- Crushers used for daily cover or construction material preparation
- Conveyors for transporting cover material 75% of the distance from the preparation area to the landfill face.

Control of Flare Emissions. When the flare gas generation rate exceeds five million cubic feet per day, MRC shall conduct an analysis of the technical and economic feasibility of recovering energy from the flared landfill gas. If the analysis indicates that energy recovery is feasible, MRC shall take the steps necessary to design, permit, and construct the energy recovery facilities before the landfill gas generation rate exceeds 10 million cubic feet per day.

If the analysis indicates that energy recovery is not feasible and the landfill gas generation rate exceeds eight million cubic feet, MRC shall take the steps necessary to retrofit an oxidation catalyst system or other type of control system to the flares which is capable of achieving at least an 80 percent reduction in carbon monoxide emissions and a 50 percent reduction in non-methane hydrocarbon emissions. The control system shall be installed and operating before the landfill gas generation rate exceeds 10 million cubic feet per day.

If an energy recovery facility is not constructed and the landfill gas generation rate exceeds 45 million cubic feet per day, MRC shall take the steps necessary to retrofit a urea injection system (or equivalent system) capable of achieving at least a 30 percent reduction in oxides of nitrogen emissions. The urea injection system shall be installed and operating before the landfill gas generation rate exceeds 50 million cubic feet per day.

In the event that either an oxidation catalyst system or urea injection system is not commercially available for landfill gas control application at the necessary time, MRC shall submit revised applications to the air pollution control agencies reflecting the higher carbon monoxide and non-methane hydrocarbon emission rates from the flares.

Temporary Road Surfaces. Temporary road surfaces will include those used during construction operations, the landing areas from which the container handling trucks will dump, and similar roads. MRC shall apply water as a dust suppressant to all unpaved road surfaces used during construction operations sufficient to maintain nominal surface moisture contents above four percent. In addition, for all unpaved road surfaces or staging areas which are used during normal project operations for a period of 30 days or less, MRC shall apply water as a dust suppressant sufficient to maintain nominal surface moisture contents above four percent.

Transitional Road Surfaces. Transitional roads are those which would be used over periods longer than 30 days but which would periodically be moved or reconstructed. The major transitional road would be the landfill circumference road which would be moved as it becomes covered with deposited material. For all such road surfaces, MRC shall apply chemical dust suppressants on a base of compacted coarse tailing to minimize fugitive dust emissions. The chemical dust suppressant shall be selected based on a field evaluation of candidate suppressants conducted upon startup of the project.

Permanent Road Surfaces. MRC shall pave all on-site roads which will be fixed in their locations for the life of the project. Such permanent roads include the Eagle Mountain Road

Extension, interior roads within the Phase II container handling facility, and the main interior haul road between the Phase II container handling facility and the landfill area. These roads shall be periodically cleaned with mechanical sweepers to minimize the buildup of loose surface material.

Tailing Excavation. Mine Reclamation Corporation shall pre-water tailing piles prior to excavation.

If necessary and effective, MRC shall apply water as a dust suppressant to processed coarse tailing prior to their loadout into haul trucks.

Miscellaneous Fugitive Dust Sources. MRC shall apply water as a dust suppressant prior to clearing material from pit benches, prior to excavating landfill gas collection pipe ditches, during reconstruction of transitional roads, and during any other operations which could result in visible fugitive dust emissions which can be seen from locations outside the project boundary.

Table 26 shows the overall effect of the mitigation measures noted above. As shown in the table, the mitigation measures have the greatest benefits for reducing emissions of oxides of nitrogen and sulfur dioxide. The oxides of nitrogen reductions are due to the use of low NOx emitting engines in locomotives under control of MRC and on-site landfill equipment, as well as the electrification of portions of the operation. The NOx reductions associated with the use of a urea injection system on the flare at maximum flare gas production levels are not shown as a credit in these tables, since they have been incorporated into the project design and are reflected in all estimates of project emissions. This is because it is anticipated that this level of control will be required by regulation.

The sulfur dioxide reductions are due to the use of ultra-low-sulfur fuel in all diesel-burning equipment owned by MRC. The use of this fuel results in associated reductions in particulate matter emissions as well. The use of an electric conveyor to transfer cover material for a portion of the distance which would otherwise be traveled by trucks on transitional roads results in a further reduction in particulate emissions.

In addition, the project design reflects substantial reductions (up to 95 percent) in particulate emissions due to a variety of dust suppression techniques, since it is likely that these measures would be required in order to comply with SCAQMD conditions. These include the use of baghouses on point sources of dust, such as crushers to prepare cover material. Consequently, all estimates of project emissions (with and without mitigation) reflect these reductions.

Relatively small reductions in carbon monoxide and volatile organic compounds (hydrocarbons) are expected beyond those already included in the project design to ensure that flare gas emissions of that pollutant do not exceed applicable regulatory trigger levels. The remaining

TABLE 26
EFFECT OF MITIGATION MEASURES ON TOTAL PROJECT EMISSIONS

Activity	Emissions - Tons/Year (with Mitigation)				
	NO_x	CO	PM10	VOL	SO_2
Off-site Sources					
Transfer stations	325(252)	98(109)	35(22)	30(23)	40(20)
Trains (basin to Ferrum Junction)	1,482(nc)	600(nc)	35(nc)	102(nc)	188(nc)
Trains (Ferrum Junction to Eagle Mtn.)	504(294)	203(nc)	21(17)	79(nc)	89(9)
On-highway trucks	189(nc)	89(nc)	27(nc)	29(nc)	39(nc)
Total off-site sources	2,500(2,217)	990(1,001)	118(101)	240(233)	356(256)
On-site Sources					
Vehicle exhaust	515(292)	173(130)	38(18)	30(19)	53(9)
Fugitive dust			140(125)		
Landfill gas flares	216(nc)	149(nc)	123(nc)	154(nc)	57(nc)
Total on-site sources	731(508)	322(279)	301(266)	184(173)	110(66)
TOTAL	3,321(2,725)	1,312(1,280)	419(307)	424(406)	466(322)

nc = no change

SOURCE: Sierra Research 1990:Tables 28, 34, and 35 (see Appendix E).

sources of carbon monoxide and VOCs are diesel engines, which have inherently low levels of these pollutants.

The following measures are not considered to be feasible at the present time. A brief explanation of why these measures are not considered feasible is provided. More thorough discussion of these topics is provided in Appendix E.

- Use of catalytic trap-oxidizers on new or existing diesel locomotives.

The technology for this type of control system is not yet available for diesel locomotive engines (Sierra Research 1990:112).

- Use of selective catalytic reductions systems on new or existing diesel locomotives

While this type of NOx control system is being used experimentally on some fixed engine applications, the technology is not yet feasible for diesel locomotives (Sierra Research 1990:113-115).

- Use of alternative fuels such as methanol, LPG, or compressed natural gas in diesel locomotives.

At the present time, no locomotive engines using these fuels are available commercially. Modifications to diesel engines to allow the use of natural gas as a fuel would involve either the development of dual fuel engines or the use of spark ignition in diesel engine equipment. Use of natural gas would require fuel tanks two to five times the size of current diesel tanks for the equivalent energy storage. The matter of alternate fuels for diesel locomotives is discussed further by Sierra Research (1990:115-116).

- Use of catalytic trap oxidizers on new diesel-fueled landfill equipment.

At the present time, there are no commercially available catalytic trap oxidizer systems that have been manufactured for use in landfill equipment (Sierra Research 1990:120).

- Use of alternative fuels such as methanol, LPG, or compressed natural gas in new diesel-fueled landfill equipment.

At the present time, commercially available engines using methanol or natural gas do not have sufficient power ratings to meet the requirements for the on-site landfill equipment. While this measure may be practical in the future, particularly after the development of new engines in response to future ARB low emission vehicle regulations, it is not presently feasible (Sierra Research 1990:120).

- Electrification of railway operations.

This measure is one of the principal locomotive emissions control measures now under consideration by the Locomotive Emissions Advisory Committee and ARB. If adopted, this measure would affect railroad main lines throughout southern California. The feasibility of this measure for the Eagle Mountain rail line between Ferrum Junction and Eagle Mountain would be lower because of the steep grades and several major turns in the rail line. These characteristics would prevent the potential advantages of all electric locomotives from being realized and, thus, would make it more difficult to justify the increased costs of all electric locomotives (approximately double the costs of diesel-electric locomotives). In addition, the costs and physical disturbance necessary for the installation of the catenary cable power system reduce the feasibility of this measure. Continued review of the feasibility of this measure is incorporated into the mitigation measures listed above.

- Electrification of all landfill equipment operations.

The degree to which this measure can be incorporated into the project is unknown at the present time. While some of the equipment—conveyor belts and other semistationary machinery—will most likely be electric, other vehicles and large pieces of equipment may require a mobility that cannot be served by electrical power. This measure would not be feasible for all equipment used on the site (Sierra Research 1990:121), but the mitigation measures require that the use of all-electric equipment be maximized.

However, should any of these technologies be required by applicable federal, state, or local regulations, MRC would take steps to comply with these regulations as expeditiously as possible. Given the duration of the project, the application of some of the above technologies is likely, but it is not possible to predict which additional control measures may be required at what point in time.

Significance After Mitigation

Emissions from the project, even after the application of feasible mitigation measures, would still exceed most thresholds which are used to determine regulatory actions over point sources. While these thresholds do not apply to the vehicle exhaust and fugitive dust sources on the project site, their use in this evaluation indicates that the project emissions would exceed those of most regulated point sources. The project air emissions would, therefore, remain a significant impact after the mitigation is implemented.

b. Reduced Landfill Operations Alternative

Impacts

Total emissions from all sources under the reduced operations alternative at maximum projected operating levels are shown in Table 27. The emissions are reported in terms of pounds per day and tons per year. These emission levels include controls that the project must incorporate to comply with SCAQMD and EPA emission standards. The following discussion details regarding the reduced operations alternative emission impacts.

Construction Operations. The emissions associated with construction of the reduced operations alternative will be the same as those described above for the proposed action.

Transfer Stations. The basic transfer station operations under the reduced operations alternative would be the same as those for the proposed action. Equipment activity rates, emission factors, and daily emissions for a typical transfer station will be the same as those discussed previously for the proposed action. However, for this analysis under the reduced operations alternative, only five transfer stations were assumed.

Solid Waste Transport. Under the reduced pperations alternative, solid waste will be transported to Eagle Mountain by two modes: trains and trucks. Approximately 88 percent of the waste will be transported by train, primarily from the Los Angeles basin, while the remainder will be hauled from central or eastern Riverside County by truck. Waste will arrive at Eagle Mountain in 20- to 25-ton containers compacted at urban transfer sites. Both transportation modes will produce exhaust emissions from the combustion of diesel fuel in internal combustion engines.

The configurations of trains and trucks will be the same under the reduced operations alternative as described above for the proposed action; however, fewer train and truck deliveries would occur. Under the reduced operations alternative, 2,000 tpd of waste will be transported to the project site by on-highway trucks. It is anticipated that within 75 miles driving distance from the project, the cost of transporting solid waste in containers from transfer stations using tractor-trailers will be less expensive than shipping it by rail. As a result, 100 truck loads per day are anticipated for the project (200 total truck trips, counting the return trips). For purposes of the air quality modeling, it was assumed that 50 trucks will make two trips per day to the project site with 20- to 25-ton loads.

On-Site Material Handling (except Fugitive Dust). As a category, on-site construction equipment is the largest source of gaseous emissions on the project site. Cumulatively, on-site construction equipment under this alternative would consume nearly 6,600 gallons of diesel fuel per day. About 28 percent of this fuel would be consumed by the fleet of trucks which

TABLE 27
REDUCED OPERATIONS ALTERNATIVE
TOTAL PROJECT EMISSIONS WITHOUT MITIGATION

Activity	Pounds/Day					Tons/Year				
	NOx	CO	PM10	VOC	SO2	NOx	CO	PM10	VOC	SO2
Off-site Sources										
Transfer stations	1,139	369	127	112	150	208	67	23	20	27
Trains	9,521	3,849	267	867	1,330	1,738	702	49	158	243
On-Highway Trucks	518	245	75	81	106	94	45	14	15	19
Subtotal, Off-site	11,178	4,463	469	1,060	1,586	2,040	814	86	193	289
On-site Sources										
On-site vehicle exhaust	2,352	789	175	140	242	429	144	32	26	44
On-site fugitive dust			630					115		
Landfill gas flares	1,182	816	676	845	310	216	149	123	154	57
Subtotal, On-site	3,534	1,605	1,481	985	552	645	293	270	180	101
TOTAL	14,712	6,068	1,950	2,045	2,138	2,685	1,107	356	373	390

SOURCE: Sierra Research 1990:Table 48 (see Appendix E).

will haul containers from the rail line to the landfill face, while the remainder is distributed among five other general categories of operations.

At the peak of landfill activity, container haul trucks will be in almost constant motion. The disposal of 16,000 tons of solid waste in 20- to 25-ton containers will require 640-800 trips by the truck fleet each day between the container handling yard and the active face of the landfill. Operating during 10 hours of daylight each day, the 26 trucks will each complete a circuit of loading and dumping every 24 minutes.

All other sources of emissions associated with on-site material handling would be the same as those described previously for the proposed action. However, the level of emissions from these activities would be reduced under the reduced operations alternative.

Landfill Gas Generation and Combustion. Estimates of landfill gas generation and associated emissions impacts are the same for the reduced operations alternative as for the proposed action.

Fugitive Dust. Fugitive dust emissions from the reduced operations alternative involve the same types of activities as discussed above for the proposed action, but will occur to a lesser degree.

Mitigation Measures

The same mitigation measures recommended for the proposed action are recommended as well for the reduced operations alternative. Twenty-one measures are discussed above under the proposed action mitigation section. These measures would have benefits similar to those discussed for the proposed action. Table 28 provides a summary of the effectiveness of these mitigation measures. Additional measures which are not considered feasible are the same as those described above for the proposed action.

Significance After Mitigation

Emissions from the reduced operations alternative, even after the application of feasible mitigation measures, would still exceed most thresholds which are used to determine regulatory actions over point sources. As with the project proposed, the air emissions from this alternative would remain a significant impact after the mitigation is implemented.

TABLE 28
REDUCED OPERATIONS ALTERNATIVE EFFECT
OF MITIGATION MEASURES ON TOTAL PROJECT EMISSIONS

Activity	Emissions - Tons/Year (with Mitigation)				
	NO_x	CO	PM10	VOL	SO_2
Off-site Sources					
Transfer stations	208(165)	67(72)	23(16)	20(16)	27(15)
Trains (basin to Ferrum Junction)	1,297(nc)	525(nc)	30(nc)	89(nc)	165(nc)
Trains (Ferrum Junction to Eagle Mtn.)	441(294)	177(nc)	19(15)	69(nc)	78(8)
On-highway trucks	94(nc)	45(nc)	14(nc)	15(nc)	19(nc)
Total off-site sources	2,040(1,813)	814(819)	86(75)	193(189)	289(207)
On-site Sources					
Vehicle exhaust	429(244)	144(109)	32(15)	26(19)	44(8)
Fugitive dust			115(103)		
Landfill gas flares	216(nc)	149(nc)	123(nc)	154(nc)	57(nc)
Total on-site sources	645(460)	293(258)	270(241)	180(170)	101(65)
TOTAL	2,685(2,273)	1,107(1,077)	346(316)	373(359)	390(272)

nc = no change

SOURCE: Sierra Research 1990:Tables 48, 50, and 51 (see Appendix E).

c. Proposed Action with Rail Access Only Alternative

Impacts

Emissions from the rail access only alternative will be associated with the same activities as the proposed action, although to a lesser extent, but would exclude those from truck delivery activities. Total emissions from all sources under the rail access only alternative at maximum projected operating levels are shown in Table 29. The emissions are reported in terms of pounds per day and tons per year. These emission levels include controls that the project must incorporate to comply with SCAQMD and EPA emission standards.

Construction Operations. The emissions associated with construction of the rail access only alternative will be the same as those described above for the proposed action.

Transfer Stations. The basic transfer station operations under the rail access only alternative would be the same as those described in above for the proposed action, with the exception of the Riverside/San Bernardino truck station. Equipment activity rates, emission factors, and daily emissions for a typical transfer station would be the same as those shown for the proposed action. Under this alternative, only six transfer stations will be needed.

Solid Waste Transport. Under the rail access only alternative, solid waste will be transported to Eagle Mountain only by trains. Waste will arrive at Eagle Mountain in 25-ton containers compacted at urban transfer sites. Rail transportation will produce exhaust emissions from the combustion of diesel fuel in internal combustion engines. The configurations of trains will be the same as under the proposed action. Fuel use and emissions for train operations under the rail access only alternative would be the same as for the proposed action.

On-Site Material Handling (except Fugitive Dust). As a category, on-site construction equipment is the largest source of gaseous emissions on the project site. Cumulatively, on-site construction equipment would consume nearly 6,600 gallons of diesel fuel per day. Nearly 28 percent of this fuel would be consumed by the fleet of trucks which will haul containers from the rail line to the landfill face, while the remainder is distributed among five other general categories of operations.

At the peak of landfill activity, container haul trucks will be in almost constant motion. The disposal of 16,000 tons of solid waste in 25-ton containers will require 640 trips by the truck fleet each day between the container handling yard and the active face of the landfill. Operating during 10 hours of daylight each day, the 26 trucks will each complete a circuit of loading and dumping every 24 minutes.

TABLE 29
RAIL ACCESS ONLY ALTERNATIVE
TOTAL PROJECT AIR EMISSIONS WITHOUT MITIGATION

Activity	Pounds/Day					Tons/Year				
	NOx	CO	PM10	VOC	SO2	NOx	CO	PM10	VOC	SO2
Off-site Sources										
Transfer stations	1,576	488	172	148	200	288	89	31	27	37
Trains	10,881	4,399	306	990	1,520	1,986	803	56	181	277
On-Highway Trucks	0	0	0	0	0	0	0	0	0	0
Subtotal, Off-site	12,457	4,887	478	1,138	1,720	2,274	892	87	208	314
On-site Sources										
On-site vehicle exhaust	2,352	789	175	140	242	429	144	32	26	44
On-site fugitive dust			630					115		
Landfill gas flares	1,182	816	676	845	310	216	149	123	154	57
Subtotal, On-site	3,534	1,605	1,481	985	552	645	293	270	180	101
TOTAL	15,991	6,492	1,959	2,123	2,272	2,919	1,185	357	388	415

SOURCE: Sierra Research 1990:Table 59 (see Appendix E).

All other sources of emissions associated with on-site material handling would be the same as those described previously for the proposed action. However, the level of emissions from these activities would be somewhat lower under the rail access only alternative .

Other combustion emissions sources under the rail access only alternative would be the same as those described above for the reduced operations alternative.

Landfill Gas Generation and Combustion. Estimates of landfill gas generation and associated emissions impacts are the same for the rail access only alternative as for the proposed project.

Fugitive Dust. Fugitive dust emissions from the rail access only alternative involve the same types of activities as discussed in above for the reduced operations alternative.

Mitigation Measures

The same mitigation measures recommended for the proposed action are recommended for the rail access only alternative. Twenty-one measures are discussed above under the proposed project mitigation section. These measures would have benefits similar to those discussed for the proposed action. Table 30 provides a summary of the effectiveness of these mitigation measures. Additional measures which are not considered feasible are the same as those described above for the proposed action.

Significance After Mitigation

Emissions from the rail access only alternative, even after the application of feasible mitigation measures, would still exceed most thresholds which are used to determine regulatory actions over point sources. As with the project proposed, the air emissions from this alternative would remain a significant impact after the mitigation is implemented.

d. No Action Alternative

Impacts

The No Project alternative assumes that southern California's landfill needs will continue to be met through use of existing landfills and by providing additional capacity at existing landfills within the SCAB. Under this alternative, truck traffic associated with residential and commercial waste pickups would be identical with that associated with the Eagle Mountain project. (These impacts were assumed to be identical for all cases and thus were not quantified.) In addition, it was assumed that there would be a slight increase in truck travel distances to transfer stations and landfills. This increase in truck traffic was based on the following estimates of replacement and expanded landfill capacity:

TABLE 30
RAIL ACCESS ONLY ALTERNATIVE
EFFECT OF MITIGATION MEASURES ON
TOTAL PROJECT EMISSIONS

Activity	Emissions - Tons/Year (with Mitigation)				
	NO_x	CO	PM10	VOL	SO_2
Off-site Sources					
Transfer stations	288(225)	89(98)	31(20)	27(21)	37(19)
Trains (basin to Ferrum Junction)	1,482(nc)	600(nc)	35(nc)	102(nc)	188(nc)
Trains (Ferrum Junction to Eagle Mtn.)	504(294)	203(nc)	21(17)	79(nc)	89(9)
On-highway trucks	0	0	0	0	0
Total off-site sources	2,274(2,001)	892(901)	87(72)	208(202)	314(216)
On-site Sources					
Vehicle exhaust	429(244)	144(109)	32(15)	26(16)	44(8)
Fugitive dust			115(103)		
Landfill gas flares	216(nc)	149(nc)	123(nc)	154(nc)	57(nc)
Total on-site sources	645(460)	293(258)	270(241)	180(170)	101(65)
TOTAL	2,919(2,461)	1,185(1,159)	357(313)	388(372)	415(281)

nc = no change

SOURCE: Sierra Research 1990:Tables 59, 60, and 61 (see Appendix E).

Estimated Additional Quantity Round Trip

Origin of Waste Material	Tons/Day	Distance
Orange County	2,000	0 miles
Riverside County	2,000	0 miles
San Bernardino County	2,000	60 miles
San Gabriel Valley	7,000	0 miles
Central LA/SF Valley	5,000	20 miles
Weighted Average	18,000	12.2 miles

For this case, no use of rail was assumed. With respect to waste handling equipment at landfills, emissions were assumed to be associated with landfill face operations; cover excavation, hauling, and daily application; and road maintenance. Landfill gas generation was conservatively assumed to be the same as the amount estimated for the Eagle Mountain project, although the higher moisture levels and rainfall in the SCAB would be expected to result in more landfill gas generated for each ton of waste buried. Compliance with applicable dust control regulations and best available control technology was assumed for this alternative; however, the use of advanced controls to reduce flare emissions was not assumed, as existing flares (or other gas disposal equipment) currently in place at smaller landfills would be used under the No Project alternative. The emissions associated with this alternative are summarized in Table 31.

Mitigation

None is available with this alternative.

Significance After Mitigation

Just as with the proposed project and other alternatives, emissions from the No Project alternative would still exceed most thresholds which are used to determine regulatory actions over point sources. As with the project proposed, the air emissions from this alternative would also be considered a significant impact.

e. Comparison of Alternatives

A comparison of the emissions associated with each of the four project alternatives is shown in Figures 79-88 for each of the criteria pollutants. Figures 79-83 show the contributions of each source to the overall total emissions for each pollutant type. For each project alternative with mitigation measures included, the distribution of pollutant totals between the two air basins is also indicated. Figures 84-88 provide additional information regarding the distribution of pollutant totals between the two air basins under the various scenarios analyzed.

TABLE 31
NO PROJECT ALTERNATIVE
TOTAL PROJECT EMISSIONS WITHOUT MITIGATION

Activity	Pounds/Day					Tons/Year				
	NOx	CO	PM10	VOC	SO2	NOx	CO	PM10	VOC	SO2
Transfer stations	1,780	539	192	162	221	325	98	35	30	40
Trains	0	0	0	0	0	0	0	0	0	0
On-Highway Trucks	337	159	49	53	69	61	29	9	10	13
On-site vehicle exhaust	1,722	615	134	111	175	314	112	24	20	32
On-site fugitive dust			721					132		
Landfill gas flares	1,689	8,164	676	1,689	310	308	1,490	123	308	57
TOTAL	5,528	9,477	1,772	2,015	775	1,008	1,729	323	368	142

SOURCE: Sierra Research 1990:Table 67 (see Appendix E).

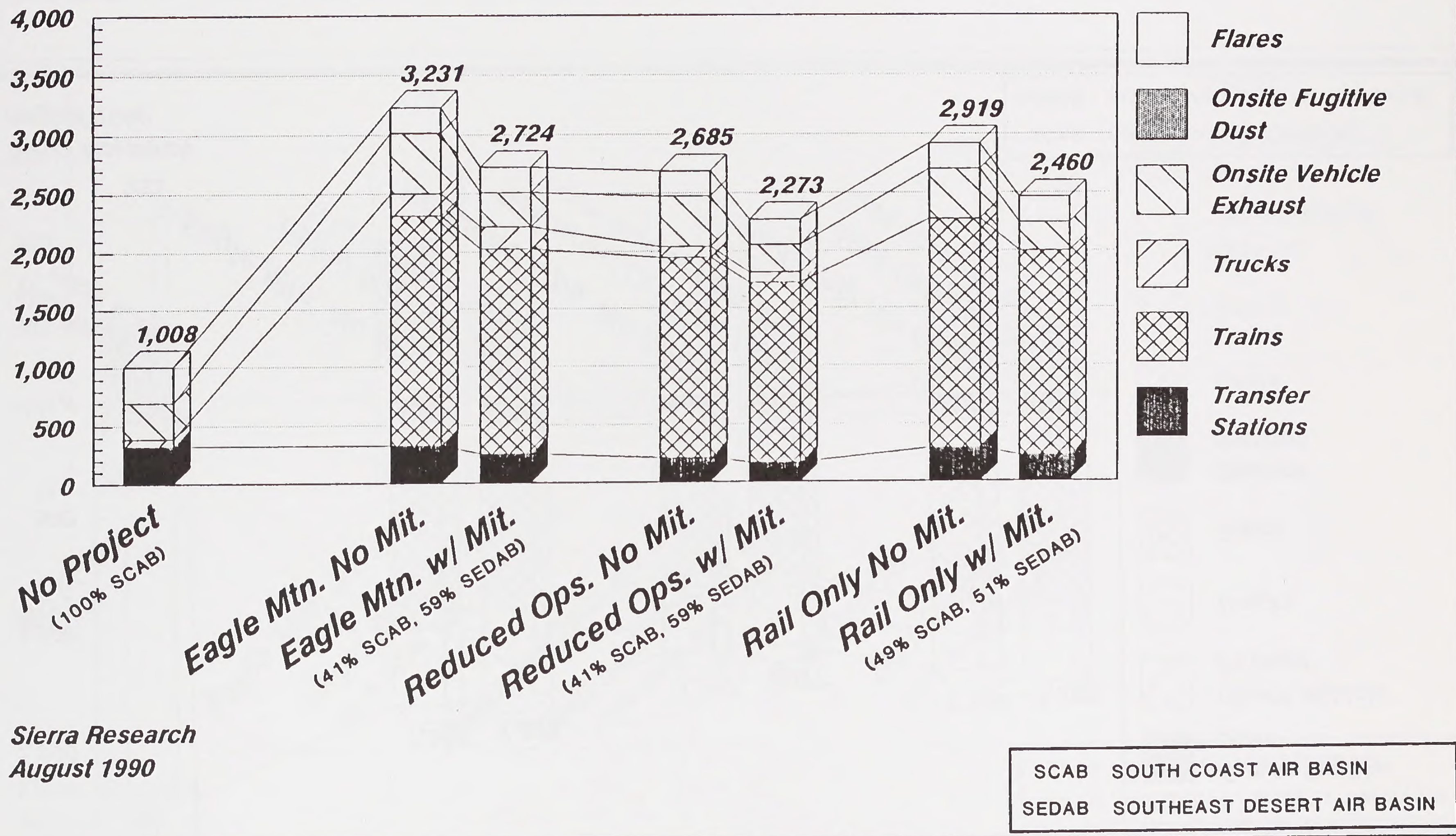


FIGURE 79. COMPARISON OF ALTERNATIVES–OXIDES OF NITROGEN ANNUAL EMISSIONS (TONS/YEAR)

RECON

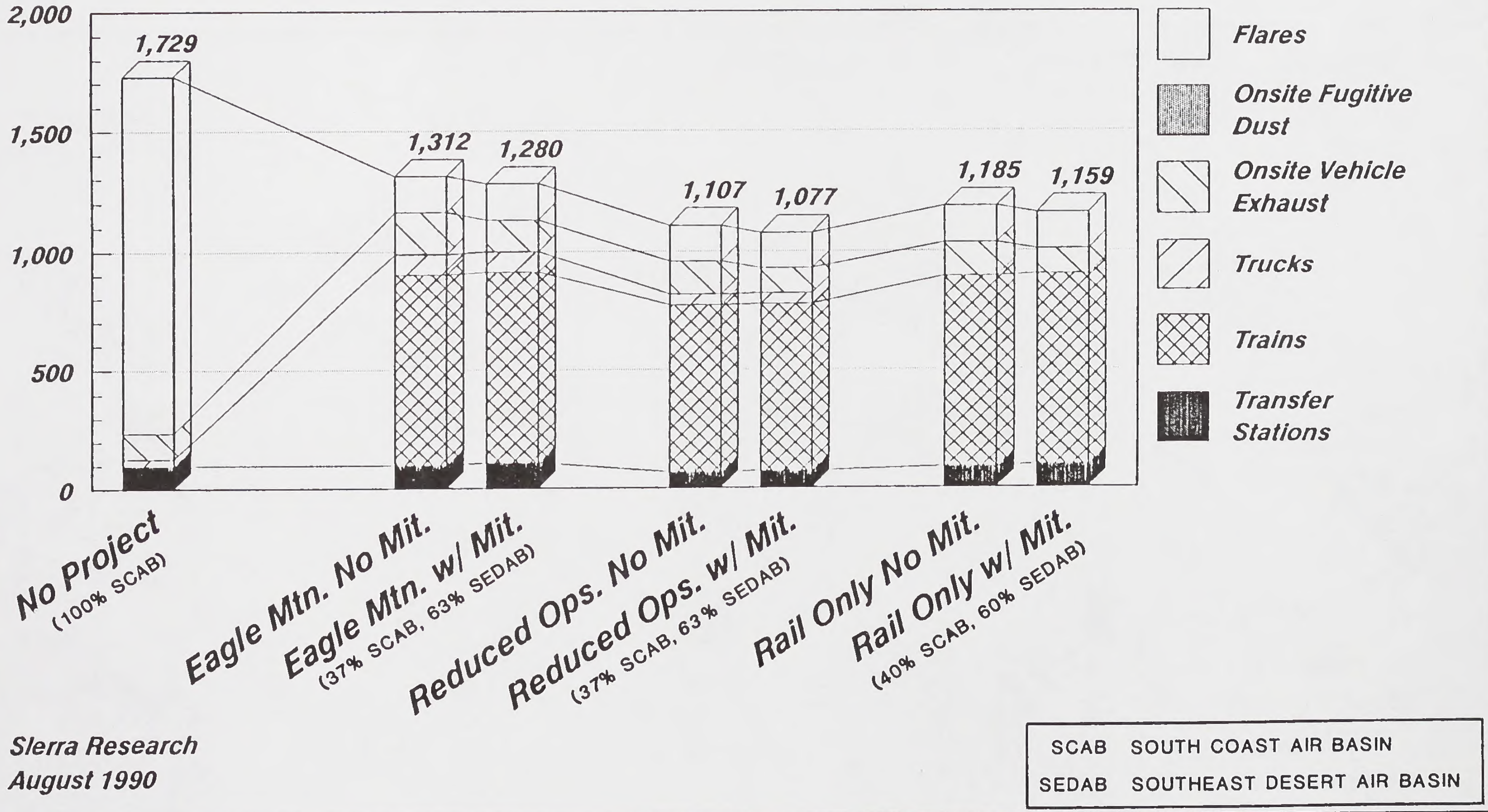


FIGURE 80. COMPARISON OF ALTERNATIVES–CARBON MONOXIDE ANNUAL EMISSIONS (TONS/YEAR)

RECON

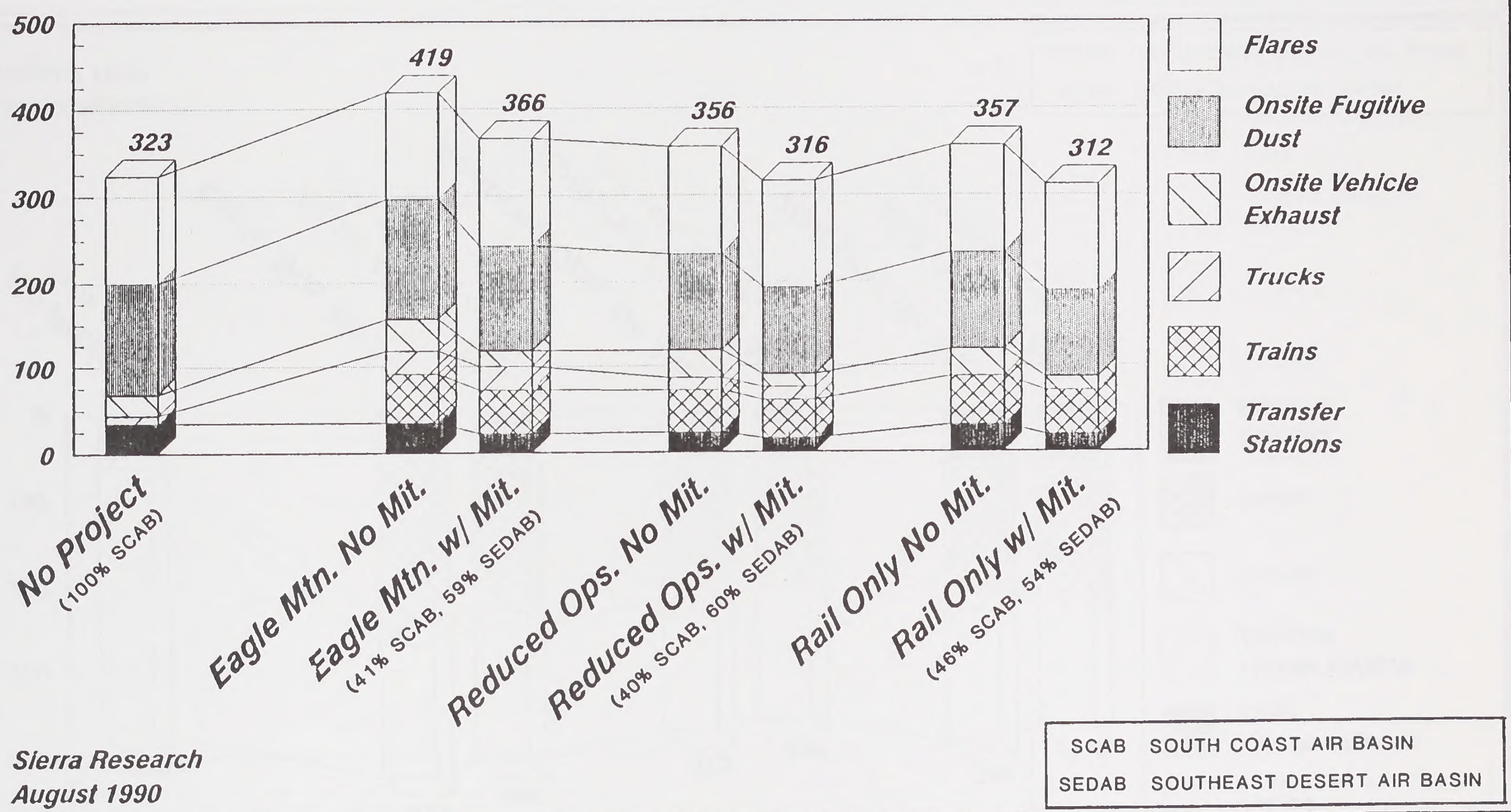
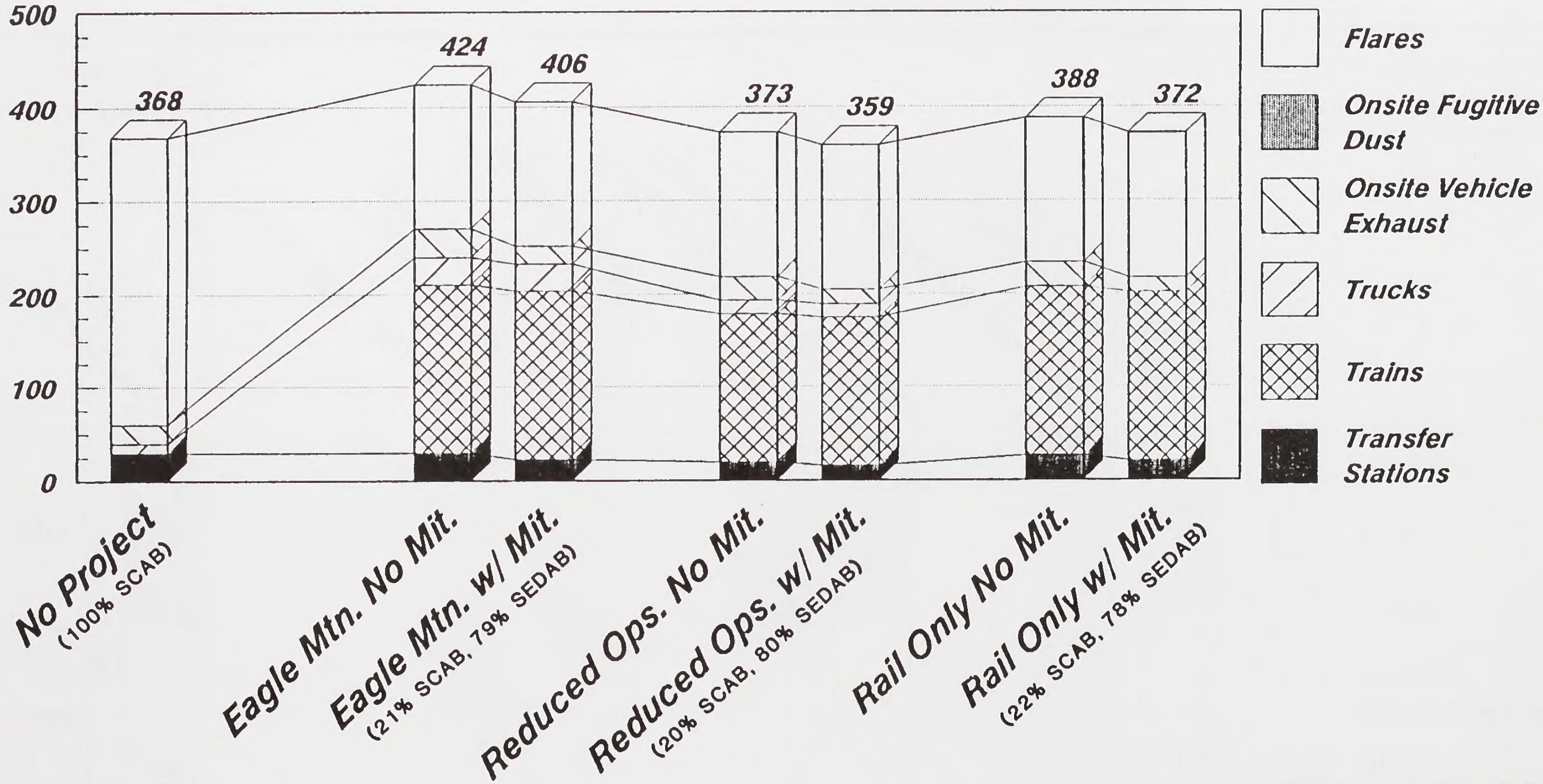


FIGURE 81. COMPARISON OF ALTERNATIVES–PARTICULATES (PM10) ANNUAL EMISSIONS (TONS/YEAR)

RECON

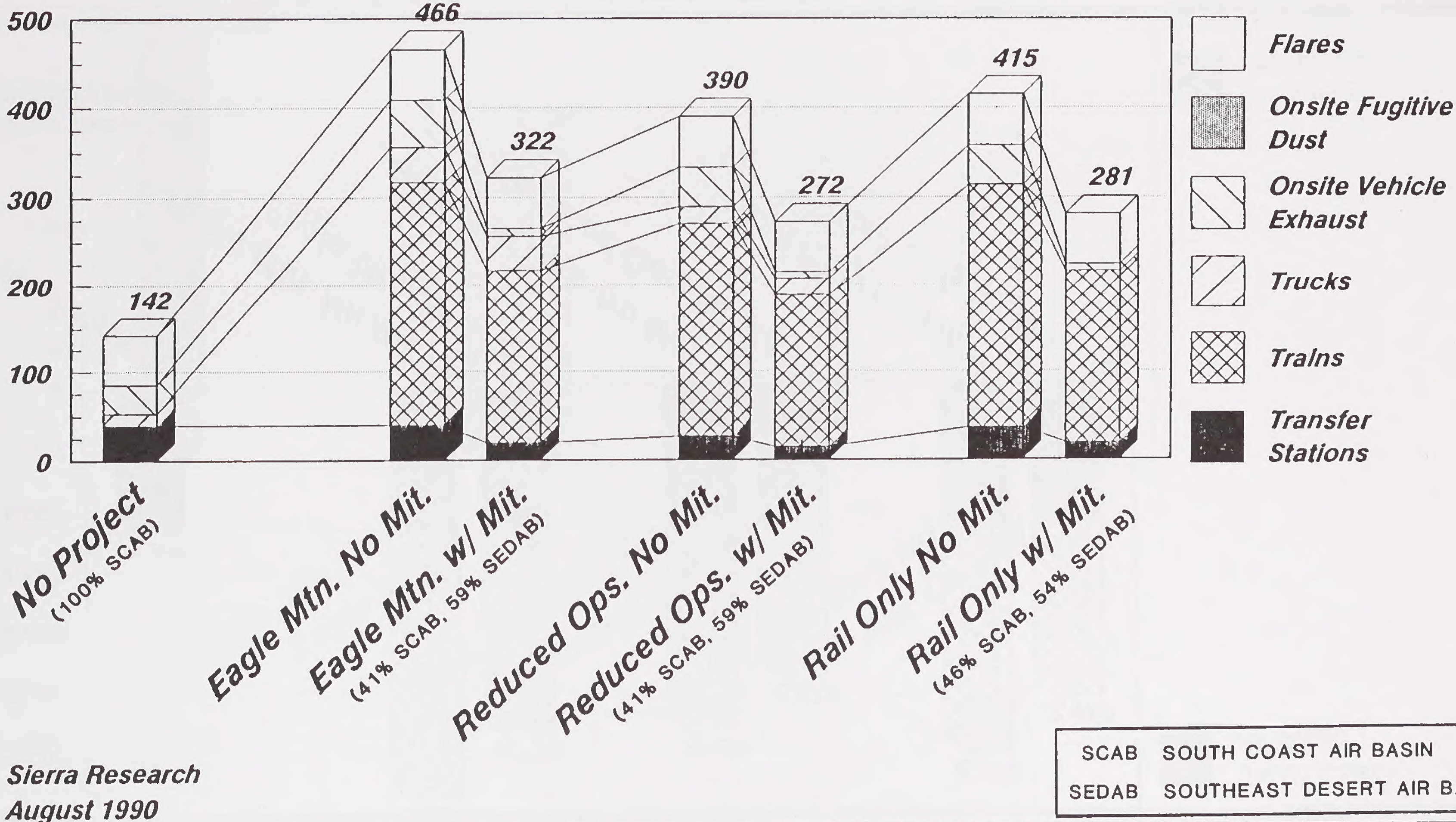


Sierra Research
August 1990

SCAB	SOUTH COAST AIR BASIN
SEDAB	SOUTHEAST DESERT AIR BASIN

FIGURE 82. COMPARISON OF ALTERNATIVES–HYDROCARBONS ANNUAL EMISSIONS (TONS–YEAR)

RECON



SCAB	SOUTH COAST AIR BASIN
SEDAB	SOUTHEAST DESERT AIR BASIN

FIGURE 83. COMPARISON OF ALTERNATIVES–SULFUR OXIDES ANNUAL EMISSIONS (TONS/YEAR)

RECON

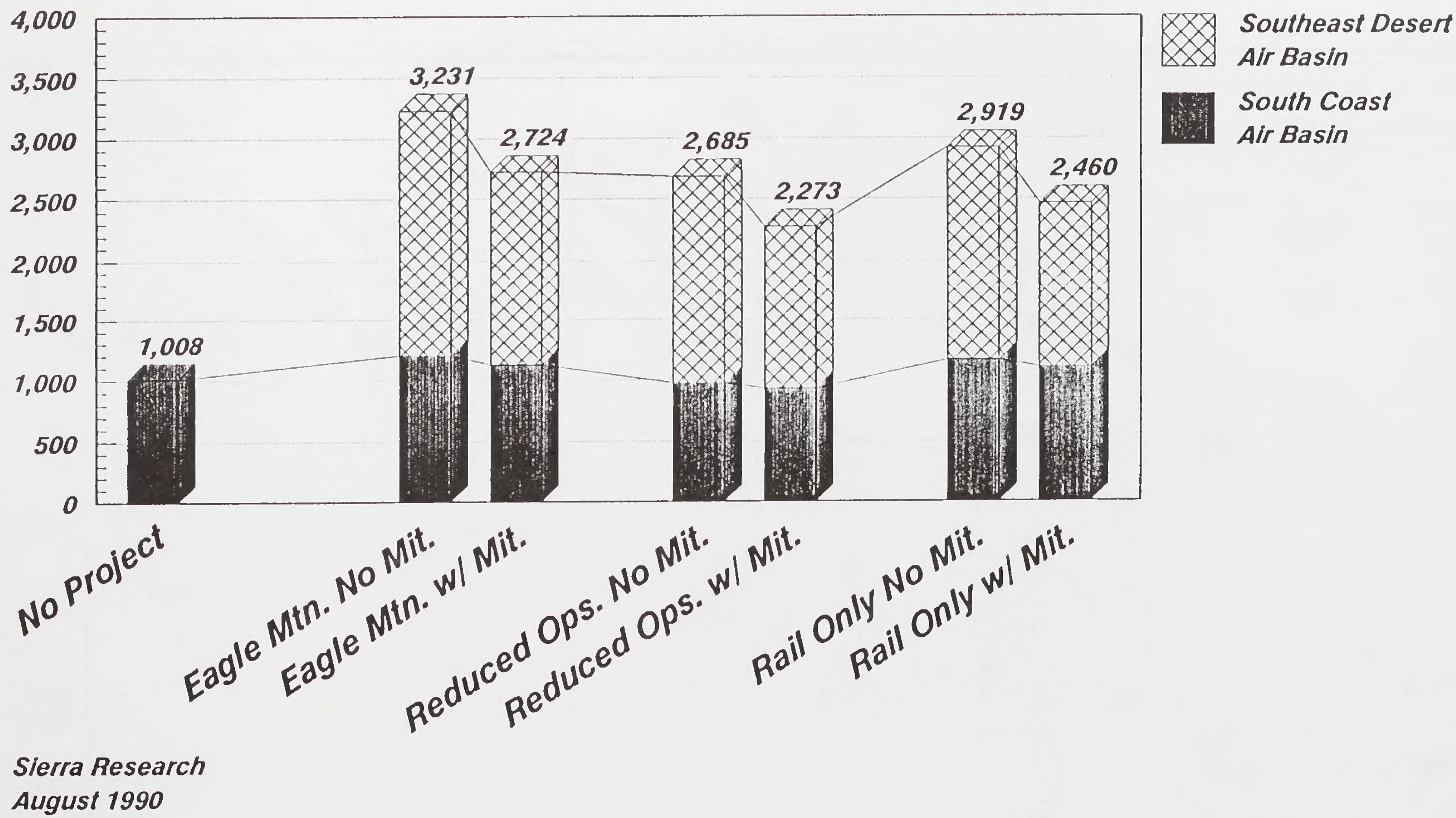


FIGURE 84. BASIN IMPACTS–OXIDES OF NITROGEN ANNUAL EMISSIONS (TONS/YEAR)

RECON

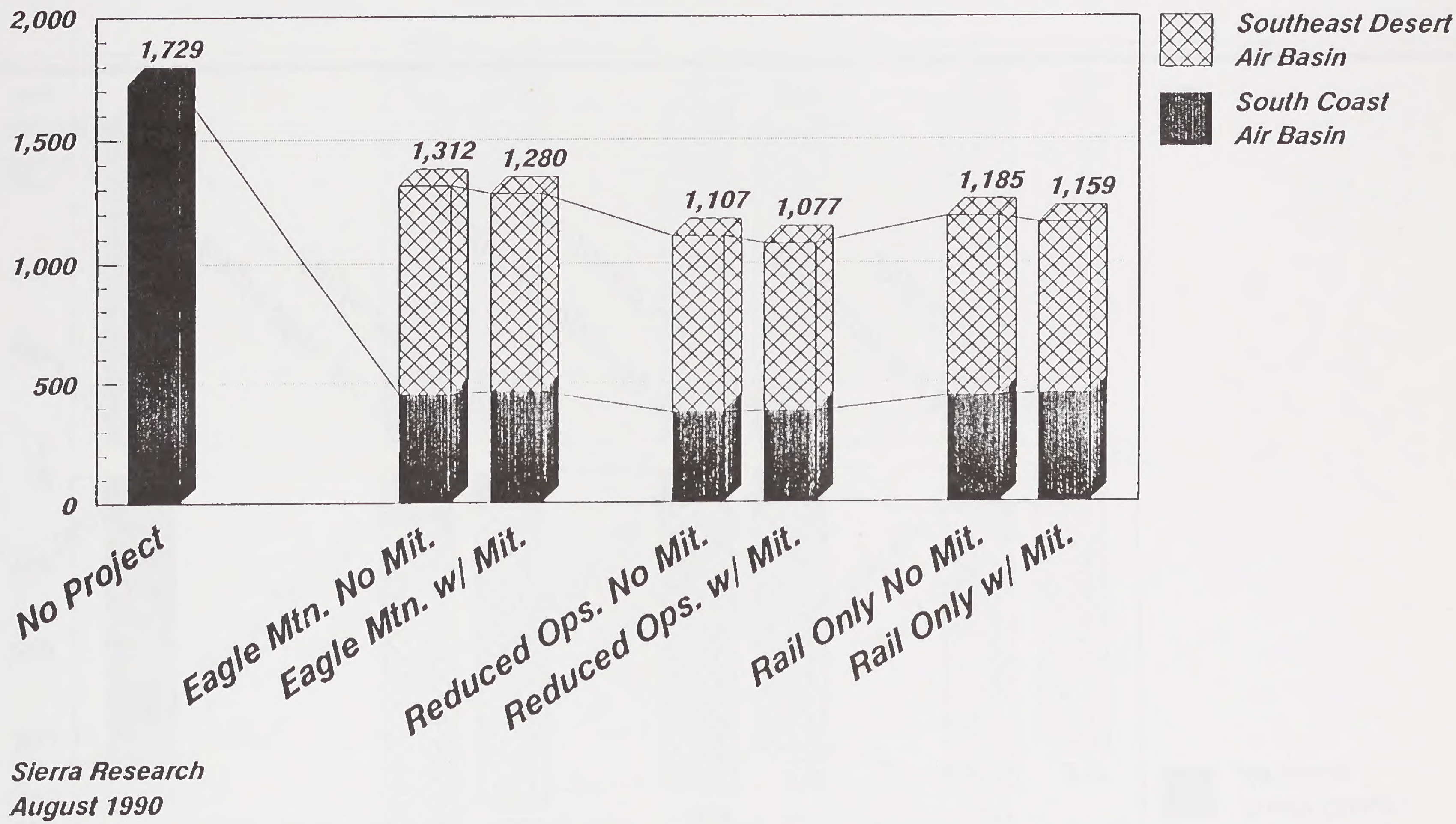


FIGURE 85. BASIN IMPACTS–CARBON MONOXIDE ANNUAL EMISSIONS (TONS/YEAR)

RECON

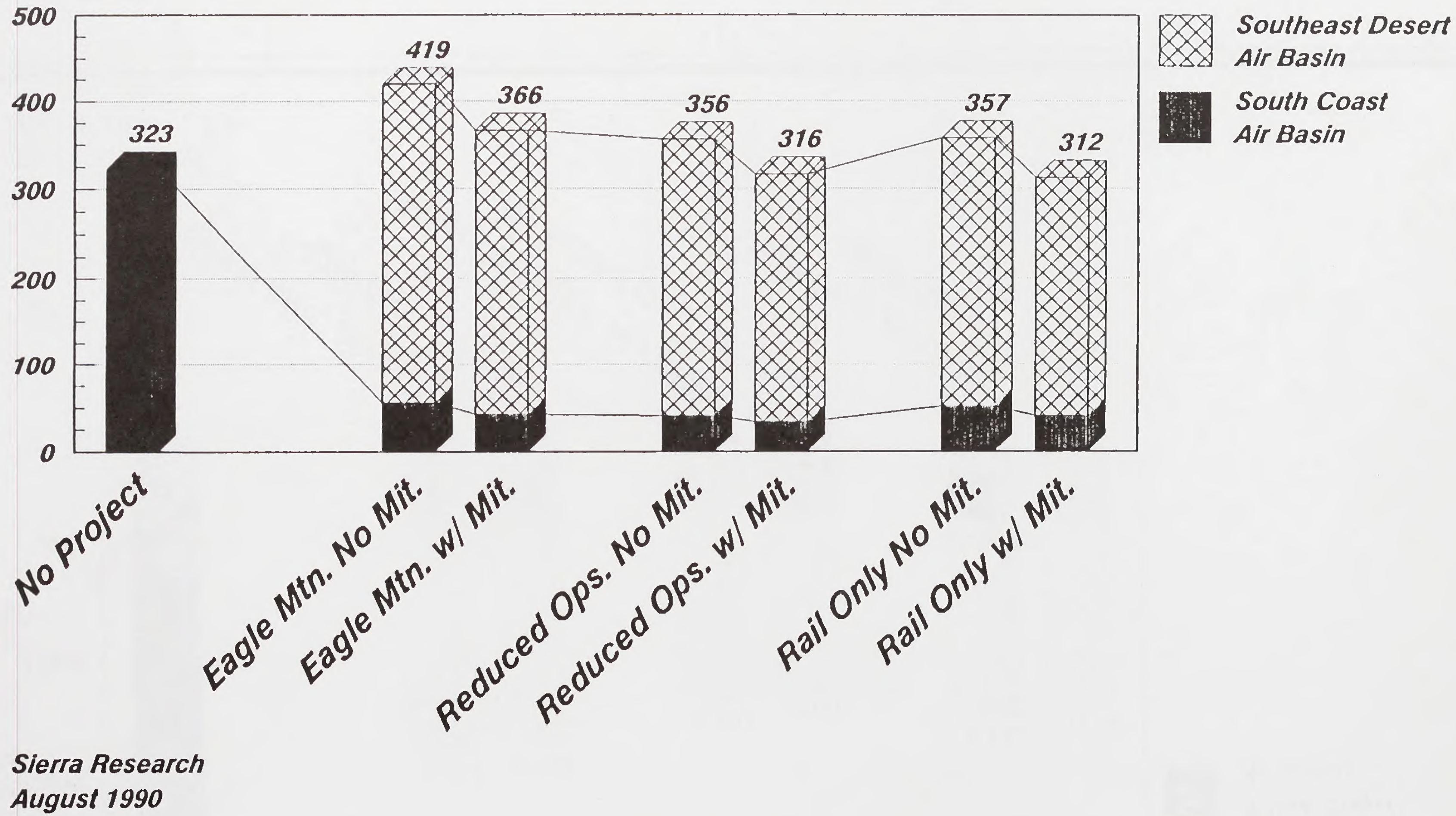


FIGURE 86. BASIN IMPACTS–PARTICULATES (PM10) ANNUAL EMISSIONS (TONS/YEAR)

RECON

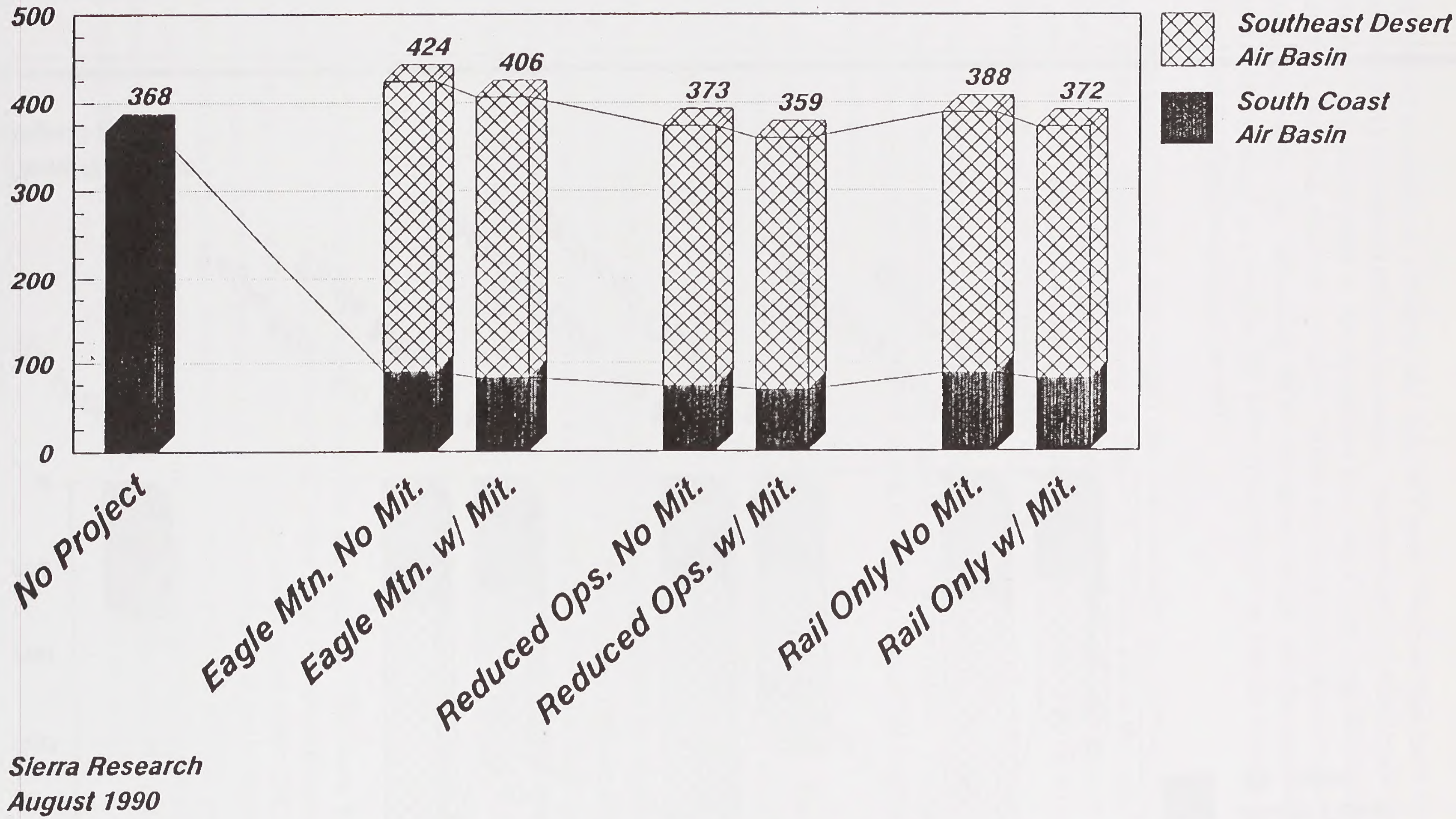


FIGURE 87. BASIN IMPACTS–HYDROCARBONS ANNUAL EMISSIONS (TONS/YEAR)

RECON

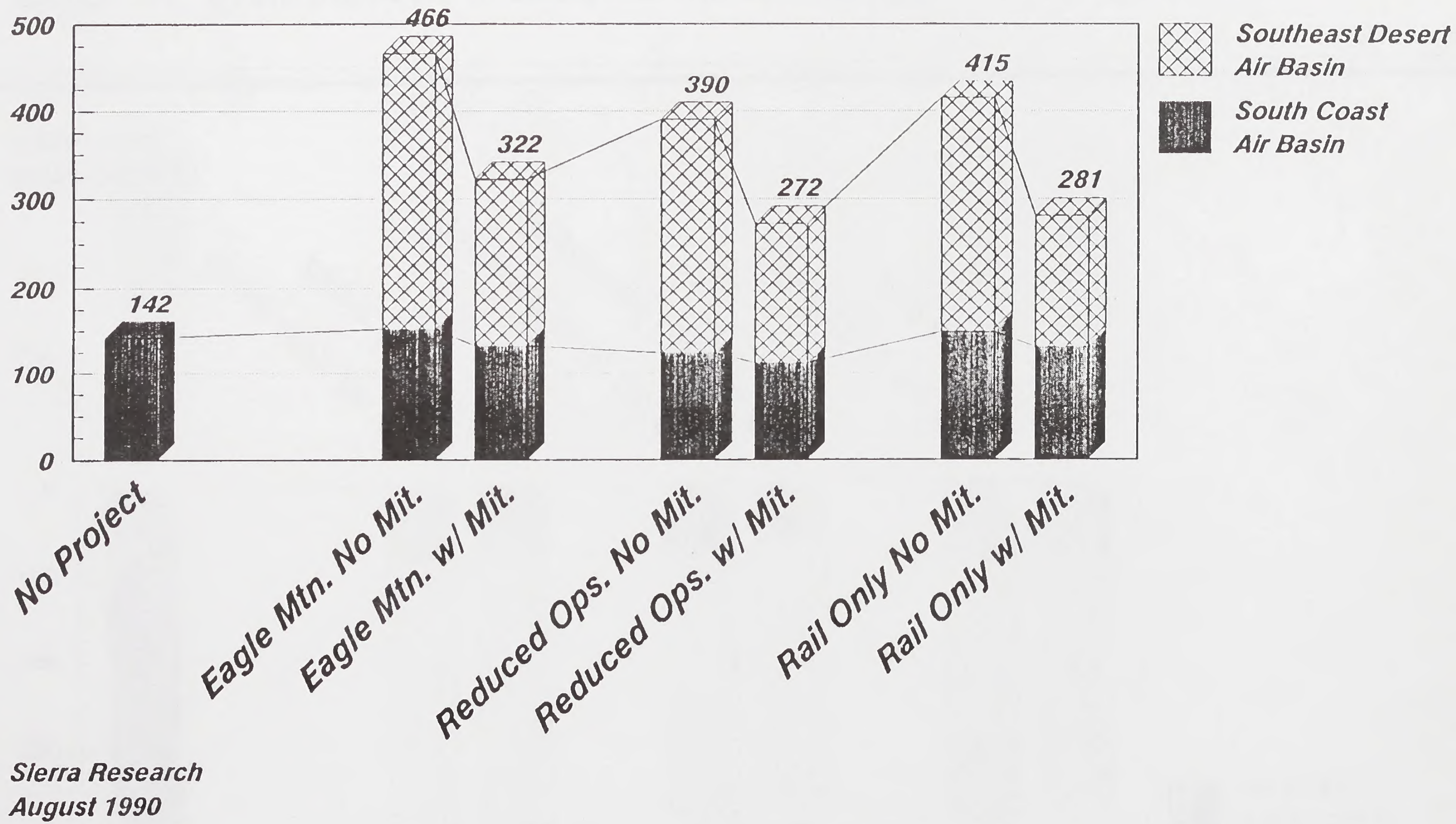


FIGURE 88. BASIN IMPACTS–SULFUR OXIDES ANNUAL EMISSIONS (TONS/YEAR)

RECON

With respect to oxides of nitrogen, the data in Figure 79 show that each of the alternatives would result in a substantial increase in oxides of nitrogen emissions compared to the No Project alternative, due principally to the emissions associated with long-distance transportation of 16-20 thousand tons of waste per day. While the mitigation measures would reduce these impacts somewhat, the remaining NOx emissions would still be considered a significant impact. As discussed previously, the NOx emissions from the No Project alternative would be considered a significant impact as well.

For carbon monoxide, each of the project alternatives results in a decrease in emissions relative to the No Project alternative, as shown in Figure 80. This is due to the anticipated lower CO emission rate from new flares (or other combustion devices) equipped with oxidizing catalysts. This reduction would also be seen if gas generation rates in the drier desert climate prove to be lower than those currently experienced in the SCAB.

The PM10 emissions from the alternatives are shown in Figure 81. The data indicate that total PM10 emissions are approximately equal, regardless of the alternative. The reduced operations and rail only alternatives, with mitigation, result in slightly lower PM10 emissions than the No Project alternative.

Non-methane hydrocarbon emissions data are presented in Figure 82. The results here are similar to those described above for particulates. Both of the 16,000 tpd alternatives would result in NMHC emissions comparable to those under the No Project alternative. The 20,000 tpd operations would result in a small increase in emissions of this pollutant.

Sulfur oxides emissions from any of the project alternatives would be much higher than those of the No Project alternative, as shown in Figure 83. This is due to the use of sulfur-containing diesel fuel to transport 16-20 thousand tons of waste per day. The large reductions in SOx emissions associated with mitigation measures are due to the use of ultra-low-sulfur fuel oil in all equipment owned or operated by Mine Reclamation Corporation.

Figures 84-88 present the same data, separated for the two air basins in which air quality impacts would be felt.

Figure 84 shows the NOx emissions from the alternatives. The data indicate that NOx emissions in the SCAB would be comparable under all of the alternatives to the No Project alternative; the principal increase in NOx emissions would occur in the SEDAB. The reduced operations alternative would actually result in lower NOx emissions in the SCAB than the No Project alternative; however, this conclusion must be viewed with caution, since the No Project alternative assumed the disposal of 20,000 tpd of waste, while the reduced project alternative disposes of only 16,000 tpd of waste. On an equivalent waste basis, the proposed action with mitigation results in a 118 tpy increase in NOx emissions in the SCAB.

Figure 85 shows that CO emissions, both in total and in the SCAB, would be substantially reduced under all of the alternatives compared with the No Project alternative. However, CO emissions would increase in the SEDAB.

With respect to particulates, Figure 86 shows that each of the alternatives would result in a substantial reduction in the SCAB compared with the No Project alternative. This is due to the relocation of the numerous particulate-emitting landfill operations to the desert site. Total particulate emissions are increased due to the increased transportation emissions.

Figure 87 shows that NMHC emissions would also be substantially reduced in the SCAB under each of the alternatives as compared with the No Project alternative. This is due largely to the relocation of flare gas emissions to the desert site.

Finally, SOx emissions in the SCAB would be the same or slightly lower under each of the alternatives when compared with the No Project alternative, as shown in Figure 88. This is due to a balance between increased SOx emissions from waste transportation and decreased SOx emissions associated with the relocation of waste handling operations from the SCAB landfills to the desert site.

2. Ambient Concentrations

Assumptions and Assessment Guidelines. In addition to estimating the emissions from the project, an assessment was made of the impact on ambient air quality which would result from these emissions. The maximum ground level concentrations for pollutants were determined for on-site operations. In addition, for the rail haul of waste, an at-grade crossing of street traffic in a residential area was evaluated and maximum ground level concentrations were determined.

To further maximize potential impacts, receptor sites closest to each source, or nearest the maximum ground level impact site, were selected for analysis. For the train haul scenario, the nearest receptor was represented as a hypothetical residence lying immediately outside the narrowest right-of-way width found along the line between Los Angeles and Ferrum Junction. For the on-site sources, the target receptor selected was the one closest to the project's southern boundary.

Worst-case wind conditions were simulated by varying wind speeds across the spectrum found in this region and at a series of directions around the compass. Wind speeds and atmospheric stability modeling combinations, as specified by the Environmental Protection Agency, were used to determine the highest impacts irrespective of direction. Then, these conditions were combined with the wind directions blowing from project sources toward identified residences to estimate the highest concentrations to which members of the public might reasonably be exposed as a result of operation of the project.

Air quality models are computer simulations which translate source-specific emission information into impacts on ambient air quality over local or regional areas. Several different approved models can be used to make this translation. Those which have been considered for the analysis are ISCST, COMPLEX I, PAL, and SHORTZ. For reasons discussed in the air quality technical appendix (Sierra Research 1990:60-61), the analysis of the Eagle Mountain project was performed using the SHORTZ model.

In assessing the significance of the resulting pollutant concentrations from the project, various measures may be used. As with the assessment of emissions, various thresholds and criteria used in the regulation of industrial point sources may be used. Examples of typical criteria are given in Table 32. Besides these regulatory criteria, the state and federal ambient air quality standards, which were presented in the Environmental Setting portion of this report (see Table 11), can also be used as a measure of significance regarding pollutant concentrations.

a. Proposed Action

Impacts

This analysis presents the impacts of the project on ambient concentrations of pollutants. This analysis was performed for the area surrounding the landfill site; for the boundary of the nearest Class I area, the Joshua Tree National Monument; and for a typical rail crossing in the SCAB.

All of the analyses described below were based on several conservative assumptions with the result that the concentrations shown are much higher than the levels which would likely be experienced. First, landfill gas generation rates are the maximum forecast, 66.25 million cubic feet per day. This forecast was based on gas generation rates in the SCAB. As discussed elsewhere in this report, gas generation rates at the Eagle Mountain site are expected to be much lower. Furthermore, the maximum landfill gas generation rates are not expected to be reached for at least 30 years after the project begins operation, if they are reached at all.

Second, the analyses were performed based on the assumption that the landfill face was at an elevation which is not expected to be reached for at least 30 years.

Third, only currently available emission control technologies have been assumed, although recent history has shown that dramatic improvements will likely be made between the start of the project and the date worst-case impacts could occur.

Fourth, all of the air quality models were run in a screening mode. This means that the impacts were analyzed for a standard combination of wind speeds, wind directions, and mixing heights which do not necessarily reflect site conditions and which were selected to maximize the modeled concentrations. Upon the collection of at least one year of actual weather data at the project site, the modeling analyses should be performed again. The use of the screening mode

TABLE 32
SAMPLE THRESHOLDS BASED ON CONCENTRATIONS FOR POINT SOURCE REGULATION

	Concentration - MG/Cubic Meter (Average Time)				
Agency and Regulation	HC	NO_x	CO	SO_2	PM10
EPA significant impact non-attainment area	--	1(ann)	500(8 hr) 2,000(1 hr)	1(ann) 5(24 hr) 25(3 hr)	
EPA significant impact or allowable measurement in Class I area	--	10	1(24 hr)	2(ann) 5(24 hr) 25(3 hr)	5(ann) 10(24 hr)
EPA land below which monitoring is not required	--	14	575(8 hr)	13(24 hr)	10(24 hr)

SOURCE: Sierra Research 1990:Tables 15-18 (see Appendix E).

results in overestimates of concentrations, particularly for longer averaging periods (e.g., 24 hours, annual average).

Project Site Area. These levels are predictions of the worst-case project impacts at any location outside of the project boundary. These concentrations are projected, in the absence of mitigation measures, at a location towards the northwest corner of the community of Eagle Mountain. The analysis is based on the extreme worst-case assumption that the elevation of the landfill has risen to near the rim of the present mine site, while the size of the tailing pile has been substantially reduced. Thus, these conditions would reflect worst-case operations after at least 30 years of project operations. At other locations, the impacts would be substantially less.

Table 33 presents the results of the air quality modeling analysis. The data indicate that the project's impacts before mitigation would represent the following fractions of the most stringent ambient air quality standards for each pollutant:

Carbon Monoxide	1%
Nitrogen Dioxide	71%
Sulfur Dioxide	20%
Fine Particulates (PM10)	153%

The relative contribution of sources to these levels are as follows:

	Landfill Equipment*	Flares
Carbon Monoxide	47%	53%
Nitrogen Dioxide		
1-hr average	75%	25%
Annual average	36%	69%
Sulfur Dioxide		
1-, 3-hr average	19%	81%
Annual average	8%	92%
Fine Particulates	99%	>1%

*Includes fugitive dust.

The data indicate that in the absence of mitigation measures, the project could result in exceedances of the state air quality standards for nitrogen dioxide and state and federal standards for fine particulate matter. Emissions of carbon monoxide and sulfur dioxide are not expected to result in violations of air quality standards for those pollutants, even in combination with emissions from other sources.

TABLE 33
PROPOSED PROJECT MAXIMUM IMPACT ON AMBIENT AIR QUALITY WITHOUT MITIGATION

Pollutant/Averaging Time	Concentrations MG/Cubic Meter				
	California Standards	National Standards	Maximum Off-Site Concentration	Maximum Background (1968-88)	Maximum Cumulative Impact
CO					
1-hour	23,000	40,000	188.3	14,950	15,138
8-hour	10,000	10,000	131.8	6,344	6,476
NO_2					
1-hour	470	-	332.0	207	539
Annual	-	100	27.3	32	59
SO_2					
1-hour	655	-	71.3	210	281
3-hour	-	1,300	64.1	-	-
24-hour	131	365	26.4	58	84
Annual	-	80	6.6	5	12
PM10					
24-hour	50	150	76.5	368	445
Annual	30	50	19.1	65	84

SOURCE: Sierra Research 1990:Table 29 (see Appendix E).

Class I Areas. The federal Prevention of Significant Deterioration (PSD) program requires an extra level of protection for air quality in the vicinity of national parks and other special protected areas. The closest such area to the Eagle Mountain project is the Joshua Tree National Monument, which has its southern boundary approximately two miles north of the project site.

Table 34 presents the results of the modeling analysis at the Joshua Tree boundary and compares these values with the allowable Class I area "increments." (It is expected that the Eagle Mountain project would not be subject to a formal PSD review, since project emissions would be below the regulatory thresholds for review. However, these increments of allowable growth can be used as one basis to evaluate the significance of the project's impacts.)

The analysis indicates that in the absence of mitigation, the project impacts will exceed allowable increments at the Joshua Tree boundary for all three pollutants for which increments have been established: nitrogen dioxide, sulfur dioxide, and fine particulates (PM10). As noted previously, this conclusion is based on extremely conservative modeling assumptions and will probably change upon a reanalysis using actual weather data from the project site.

In addition to this quantitative estimate of the project impact, three other concerns of the National Park Service should be noted. First, because nitrogen oxides are precursors (along with reactive organic gases) for the formation of ozone, the increases of nitrogen oxides in the SEDAB attributable to the project may worsen ozone concentrations within Joshua Tree National Monument. Second, increases in air pollution may adversely affect soil chemistry, in particular by increasing available nitrates in the soil. Finally, the fugitive dust and other particulate emissions from the project would contribute to the increase in desert haze which has been documented by the park service over the years.

Typical Rail Crossings. During the scoping process, several commenters suggested that there may be adverse air quality impacts at locations in southern California where rail crossings are at grade and periodically result in traffic backups waiting for a passing train. Using the same data presented elsewhere in the report regarding traffic impacts, a modeling analysis was performed to evaluate the potential air quality impacts during these events. The results are presented in Table 35.

The results of this analysis are presented for one-hour averaging periods only, since these impacts would occur for only short periods of time during the day. The data indicate that there would be only a minor contribution to carbon monoxide during train crossings. The nitrogen dioxide impact reflects the short-term concentration which could be reached near the intersection, assuming worst-case weather conditions. As with previous analyses, these levels are likely to overestimate actual concentrations. These effects of the project are not considered significant impacts.

TABLE 34
PROPOSED PROJECT MAXIMUM IMPACT ON CLASS I AREA WITHOUT MITIGATION

Pollutant/Averaging Time	Concentrations in MG/Cubic Meter: Allowable Class I Increment	Concentrations in MG/Cubic Meter: Maximum Impact at Class I Area
NO_2		
Annual	2.5	8.1
SO_2		
3-hour	25.0	18.9
24-hour	5.0	8.0
Annual	2.0	2.0
PM10		
24-hour	10.0	17.9
Annual	5.0	4.5

SOURCE: Sierra Research 1990:Table 29 (see Appendix E).

TABLE 35
PROPOSED PROJECT
AIR QUALITY IMPACTS AT TYPICAL RAIL CROSSINGS

	Concentrations in MG/Cubic Meter		
Pollutant	California Standards	National Standards	Maximum Impact
CO 1-hour	23,000	40,000	332
NO_2 1-hour	470	-	143

SOURCE: Sierra Research 1990:Table 30 (see Appendix E).

Mitigation

All of the mitigation measures discussed above which would reduce the total emissions of the project would also tend to reduce its contribution towards ambient pollutant concentrations. Table 36 illustrates the effect on pollutant concentrations from implementing the various emissions mitigation measures described earlier. The results which reflect the mitigation measures indicate that the state standard for nitrogen dioxide, and state and federal standards for fine particulates may still be exceeded. In addition, the analysis projects that Class I increments would still be exceeded for nitrogen dioxide, sulfur dioxide, and fine particulate matter.

To further narrow the area of concern, an additional analysis was performed without the flares. The data indicate that all of the air quality standards (with the exception of PM10 standards) and Class I increments would be achieved if the flares could be replaced with an alternative method of disposal. Upon a reanalysis using actual weather data from the project site, further mitigation measures may be required. As discussed previously, each of these air quality impact analyses reflect a high degree of conservatism, including:

- Maximum potential landfill gas generation rates which may never be reached in the project's dry, desert location;
- Landfill operations, locations, and gas generation rates based on projections 30 years (or more) in the future, but reflecting only currently available air pollution control technologies;
- Use of a screening mode for all air dispersion models, which results in worst-case assumptions for weather and overestimates of pollutant concentrations, particularly for longer averaging periods.

Upon the collection of at least one year of actual weather data, the air quality modeling analysis should be performed again. Therefore, additional conditions should be placed on the project approval:

1) Prior to the receipt of waste material for disposal at the landfill site, MRC shall complete the acquisition of at least 12 months of valid meteorological data at the site. The data shall be collected in accordance with a monitoring plan reviewed and approved by the South Coast Air Quality Management District and the U.S. Environmental Protection Agency.

2) Prior to the receipt of waste material for disposal at the landfill site, MRC shall complete a revised air quality modeling analysis and screening level health risk assessment analysis using site specific meteorological data. This analysis shall be submitted to the County of Riverside Department of Health as part of the Report of Disposal Site Information required to obtain a solid waste facilities permit. If this analysis indicates that there is a potential for significant adverse impacts due to operation of the facility, MRC shall develop and

TABLE 36
PROPOSED PROJECT
EFFECT OF MITIGATION AND ELIMINATING GAS FLARE

Pollutant/Averaging Time	Concentrations MG/Cubic Meter: Maximum Cumulative Impact (Project + Background)			Maximum Impact at Class I Area		
	No Mitigation	with Mitigation	No Flare	No Mitigation	with Mitigation	No Flare
CO						
1-hour	15,138	15,137	15,037	-	-	-
8-hour	6,476	6,475	6,405	-	-	-
NO_2						
1-hour	539	491	405	-	-	-
Annual	59	58	40	8.1	7.7	2.0
SO_2						
1-hour	281	274	216	-	-	-
3-hour	-	-	-	18.9	17.6	1.4
24-hour	84	83	59	8.0	7.8	0.3
Annual	12	11	5	2.0	1.9	0.1
PM10						
24-hour	445	441	441	17.9	17.7	3.6
Annual	84	83	83	4.5	4.4	0.9

SOURCE: Sierra Research 1990:Tables 29, 36, and 37 (see Appendix E).

submit for approval additional mitigation strategies which will reduce remaining significant impacts, if any, to levels which are considered acceptable.

Significance After Mitigation

In the absence of additional mitigation measures, more refined analysis based on more accurate meteorological information and project assumptions, and/or better technologies for disposal of landfill gas without the use of flares, the project impacts on ambient air quality would remain significant.

b. Reduced Landfill Operations Alternative

Impacts

Using the same methodology as for the proposed action, an analysis was performed of the impacts of the reduced operations alternative on ambient concentrations of pollutants. This analysis was performed for the area surrounding the landfill site; for the boundary of the nearest Class I area, the Joshua Tree National Monument; and for a typical rail crossing in the SCAB.

Near the Landfill Site. These levels are predictions of the worst-case project impacts at any location outside of the project boundary. These concentrations are projected, in the absence of mitigation measures, at a location towards the northwest corner of the community of Eagle Mountain. The analysis of impacts under this reduced landfill operations alternative is based on the same extreme worst-case assumptions discussed above for the proposed project.

Table 37 presents the results of the air quality modeling analysis. The data indicate that the impacts before mitigation resulting from the reduced landfill operations alternative would represent the following fractions of the most stringent ambient air quality standards for each pollutant:

Carbon Monoxide	1%
Nitrogen Dioxide	65%
Sulfur Dioxide	20%
Fine Particulates (PM10)	126%

As with the proposed project, the reduced operations alternative would also result in exceedances of the state air quality standards for nitrogen dioxide and state and federal standards for fine particulate matter. Emissions of carbon monoxide and sulfur dioxide are not expected to results in violations of air quality standards for those pollutants, even in combination with emissions from other sources.

TABLE 37
REDUCED LANDFILL OPERATIONS ALTERNATIVE
MAXIMUM IMPACT ON AMBIENT AIR QUALITY WITHOUT MITIGATION

Pollutant/Averaging Time	Concentrations MG/Cubic Meter				
	California Standards	National Standards	Maximum Off-Site Concentration	Maximum Background (1968-88)	Maximum Cumulative Impact
CO					
1-hour	23,000	40,000	184.3	14,950	19,134
8-hour	10,000	10,000	129.8	6,344	6,473
NO_2					
1-hour	470	-	306.4	207	513
Annual	-	100	26.8	32	59
SO_2					
1-hour	655	-	69.8	210	281
3-hour	-	1,300	62.8	-	-
24-hour	131	365	26.2	58	84
Annual	-	80	6.5	5	12
PM10					
24-hour	50	150	63.2	368	431
Annual	30	50	15.8	65	81

SOURCE: Sierra Research 1990:Table 49 (see Appendix E).

Class I Area. Table 38 presents the results of the modeling analysis for the reduced operations alternative at the Joshua Tree boundary and compares these values with the allowable Class I area "increments." (It is expected that the Eagle Mountain project would not be subject to a formal PSD review, since project emissions would be below the regulatory thresholds for review. However, these increments of allowable growth can be used as one basis to evaluate the significance of the project's impacts.)

The analysis indicates that in the absence of mitigation, the impacts for this alternative will exceed allowable increments at the Joshua Tree boundary for all three pollutants for which increments have been established: nitrogen dioxide, sulfur dioxide, and fine particulates (PM10). As in the case of the proposed action, this conclusion will probably change upon a reanalysis using actual weather data from the project site.

Typical Rail Crossings. Impacts at typical rail crossings under the reduced operations alternative would be identical to those discussed above for the proposed action. However, the number of trains per day would be approximately 12 percent fewer, thus reducing the frequency with which these impacts would occur.

Mitigation

All of the mitigation measures discussed above which would reduce the total emissions of the project would also tend to reduce its contribution towards ambient pollutant concentrations. Table 39 illustrates the effect on pollutant concentrations from implementing the various emissions mitigation measures described earlier. The results which reflect the mitigation measures indicate that the state standard for nitrogen dioxide, and state and federal standards for fine particulates may still be exceeded. In addition, the analysis projects that Class I increments would still be exceeded for nitrogen dioxide, sulfur dioxide, and fine particulate matter for some averaging times.

The additional conditions described above for the proposed project relating to the gathering of a full year of meteorological data, performance of new air quality modeling, and development of additional mitigation measures also apply to the reduced operations alternative.

Significance After Mitigation

In the absence of additional mitigation measures, more refined analysis based on more accurate meteorological information and project assumptions, and/or better technologies for disposal of landfill gas without the use of flares, the impacts of the reduced operations alternative on ambient air quality would remain significant.

TABLE 38
REDUCED OPERATIONS ALTERNATIVE
MAXIMUM IMPACT ON CLASS I AREA WITHOUT MITIGATION

Pollutant/Averaging Time	Concentrations in MG/Cubic Meter Allowable Class I Increment	Maximum Impact at Class I Area
NO_2		
Annual	2.5	8.0
SO_2		
3-hour	25.0	18.6
24-hour	5.0	8.0
Annual	2.0	2.0
PM10		
24-hour	10.0	17.7
Annual	5.0	4.4

SOURCE: Sierra Research 1990:Table 49 (see Appendix E).

TABLE 39
REDUCED OPERATIONS ALTERNATIVE
EFFECT OF MITIGATION

Pollutant/Averaging Time	Concentrations MG/Cubic Meter			
	Maximum Cumulative Impact (Project + Background)		Maximum Impact at Class I Area	
	No Mitigation	with Mitigation	No Mitigation	with Mitigation
CO				
1-hour	15,134	15,133	-	-
8-hour	6,473	6,472	-	-
NO_2				
1-hour	513	484	-	-
Annual	59	57	8.0	7.6
SO_2				
1-hour	281	274	-	-
3-hour	-	-	18.6	17.6
24-hour	84	83	8.0	7.8
Annual	12	11	2.0	1.9
PM10				
24-hour	431	428	17.7	17.6
Annual	81	80	4.4	4.4

SOURCE: Sierra Research 1990:Tables 29, 36, and 37 (see Appendix E).

a. Proposed Action with Rail Access Only Alternative

Impacts

Ambient concentrations associated with the rail access only alternative would be the same as those discussed above for the reduced operations alternative.

Mitigation

The same mitigation measures discussed above for the proposed project would be applicable to the rail access only alternative, with the exception of those measures directed towards on-highway trucks.

Significance After Mitigation

As with the proposed project and the reduced operations alternative, the rail access only alternative would also have significant and unmitigated impacts on ambient air quality.

d. No Action Alternative

Impacts

Due to the large number of existing landfill sites, it is not reasonably possible to estimate the ambient pollutant concentrations at these sites. Ambient concentrations may be either higher or lower depending on local geography and weather patterns. For the local area around Eagle Mountain, the No Project alternative would avoid localized impacts to ambient air quality.

Mitigation

None is available with this alternative.

Significance After Mitigation

Because the SCAB is currently a nonattainment air basin and because substantial air pollutant emissions are associated with the disposal of solid waste by any means, the No Project alternative would contribute to violations of state and national ambient air quality standards in that air basin. Thus, its contribution to ambient air quality in the SCAB would be considered a significant impact. The No Project alternative would, however, avoid contributing to a similar impact in the SEDAB and the area around Eagle Mountain.

3. Screening Level Health Risk Assessment

Assumptions and Assessment Guidelines. The screening health risk assessment was performed using the results from the emissions inventory and ambient air quality analyses reviewed above. Thus, the assumptions incorporated into that work carry over into this topic. Of particular importance are the conservative or worst-case assumptions relating to the air dispersion analysis. These include a variety of assumptions intended to identify the maximum ground level concentrations from the project (wind speed, direction, and local atmospheric stability assumptions to maximize impacts) and the assumptions relating to the rate of landfill gas production. The resulting ground level concentrations of various toxic compounds contained within landfill gas were then combined with unit risk factors for each to estimate the cancer risk from each component. Then the individual cancer risks were summed to estimate the overall cancer risk from the landfill gas emissions. The analysis is presented in Appendix E (Sierra Research 1990:95, Tables 31 and 32).

In California, AB 2588 established a process for developing an inventory of toxic substances, determining their health risks, and notifying the public regarding those risks. Proposition 65 requires warnings to the public if they are exposed to significant concentrations of substances listed by the Governor as causing cancer or reproductive toxicity. Regulations implementing these measures require health risk assessments for toxic substances and identify risk levels which are considered not significant. For example, for substances that cause cancer, the "no significant risk" level is established as one excess case of cancer in an exposed population of 100,000, assuming a lifetime exposure (Sierra Research 1990:46). This equates to ten in one million.

The typical regulatory process using risk assessments involves several steps, the first of which is the preparation of a screening level assessment. The screening level assessment is known to conservatively overestimate the frequency of cancer. If the results of the screening level assessment exceed ten in one million, then a more detailed analysis using a more accurate air dispersion model and/or more accurate multipath risk assessment procedure is used. Thus, the screening level assessment results presented here are by no means a final determination of the actual risk represented by the project.

a. Proposed Action

Impacts

As discussed in the Public Health and Safety section of this EIS/EIR, landfill gases can contain trace quantities of materials which are considered to be toxic air contaminants. For this analysis, an estimated 20 percent of these gases are assumed to escape from the landfill directly into the air, while the remaining 80 percent are expected to be captured by the landfill gas collection system and burned in the flares. A screening level health risk assessment was

performed on the flare and fugitive gas emissions using techniques recommended by the California Air Pollution Control Officer's Association. The results are presented in Appendix E (Sierra Research 1990:95).

The screening analysis indicates that the increased cancer risk from the proposed facility, based on the maximum gas production rate and the highest concentrations of trace toxic air contaminants, would be 19 in a million. Based on the maximum gas production rate and average concentrations of trace toxic air contaminants, the increased cancer risk from the landfill operation would be approximately six in a million. This maximum risk would occur in the community of Eagle Mountain. As discussed above, these results are likely overestimates of the actual risk.

An analysis of the source of this risk indicates that 98 percent of the risk is associated with fugitive landfill gas emissions, and not the flares. Consequently, the fact that the project site is located in a dry climate where gas generation rates are expected to be lower is beneficial. In addition, the risks are associated with gas generation rates which would not be reached for 30 years, if ever. Nonetheless, this area will be addressed in a more refined modeling analysis, and additional mitigation measures may be required.

Mitigation

The project design includes measures to intercept and remove any significant volumes of hazardous wastes within the municipal waste stream. These measures would serve to minimize the potential for certain of the toxic substances in typical landfill gas that pose a health risk. The requirement discussed above under Ambient Air Quality regarding meteorological data collection and updating the analysis of air quality effects as part of the Report of Disposal Site Information will also serve to resolve uncertainties associated with the conservative nature of the analysis and to identify additional mitigation measures if necessary.

Significance After Mitigation

Based on the results of the screening level health risk assessment, the risk from toxic air contaminants associated with the Eagle Mountain project may be greater than 10 in a million, which is typically assumed to represent a significant impact.

b. Reduced Landfill Operations Alternative

Impacts

Since landfill gas generation rates would be the same under the reduced operations alternative as under the proposed action, the results of the screening level health risk assessment described above would be applicable to the reduced operations alternative as well.

Mitigation

Mitigation measures under the reduced operations alternative would be the same as those for the proposed action. These include the measures designed into the project to minimize the presence of toxic substances and the requirement for a more refined analysis and the identification of additional mitigation, if necessary, as part of the Report of Disposal Site Information.

Significance After Mitigation

Potential impacts to public health under the reduced operations alternative would be identical with those of the proposed project and would be considered significant.

c. Proposed Action with Rail Access Only Alternative

Impacts

Since landfill gas generation rates would be the same under the rail access only as under the proposed action, the results of the screening level health risk assessment described above would be applicable to the rail access only alternative as well.

Mitigation

Mitigation measures under the rail access only would be the same as those for the proposed action. These include the measures designed into the project to minimize the presence of toxic substances and the requirement for a more refined analysis and the identification of additional mitigation, if necessary, as part of the Report of Disposal Site Information.

Significance After Mitigation

Potential impacts to public health under the rail access only alternative would be identical with those of the proposed project and would be considered significant.

d. No Action Alternative

Impacts

Due to the large number of existing landfill sites, it is not reasonably possible to estimate landfill gas generation, toxic gas emissions, and resulting health risk for each. Concentrations of toxic gas emissions, and the resulting health risk at each site, may be either higher or lower than the proposed project depending on local geography and weather patterns. Two general statements may be made, however. First, the No Project alternative would avoid any health risk effects for the area around the project site. Second, existing conventional landfills in the southern

California region expose a greater population to the statistical health risks associated with landfill gas emissions and, thus, result in a higher cumulative health risk than the proposed project would.

Mitigation

No mitigation of health risks is available under the No Project alternative, beyond the implementation of regulatory programs that apply to all landfills and sources of toxic air emissions.

Significance After Mitigation

Potential impacts to public health under the No Project alternative would be approximately the same as the proposed project. Due to the greater populations exposed to conventional landfills, the total risk under this alternative would probably exceed that of the proposed project.

4. Consistency with Regulatory Programs

Assumptions and Assessment Guidelines. This discussion is less related to identifying specific impacts and mitigation, but provides an overall summary of applicable regulations which will apply to the project and which will serve as the mechanism to enforce certain of the mitigation measures and requirements for further study identified in the earlier discussions. The applicable regulations and a brief summary of each are discussed in the air quality technical report (Appendix E).

a. Proposed Action

Impacts

Consistency with Federal PSD Levels. The determination as to whether the proposed project will be subject to PSD review is based on its emissions. For the proposed project, the "source" which could be subject to review includes the landfill thermal combustors and the mineral processing equipment.

The use of thermal combustors to incinerate landfill gas, in compliance with all other regulations, could cause the project to exceed prevention of significant deterioration trigger levels at the maximum expected flow rate, in the absence of any mitigation. To reduce project emissions, however, mitigation has been proposed for flare emissions. Such mitigation will be provided through the installation and operation of a selective non-catalytic reduction system and an oxidation catalyst in the event that gas flow rates approach the maximum predicted levels.

The oxidation catalyst, in a temperature regime up to 1400 degrees Fahrenheit, can achieve better than 90 percent control efficiency for carbon monoxide in normal operation. The same catalyst bed will produce reductions in reactive organic gas emissions exceeding 50 percent. The selective non-catalytic reduction catalyst would use ammonia or urea to reduce NOx emissions by 30 percent. The oxidation catalyst system would be installed on the flares if gas generation exceeds approximately 10 million cubic feet per day. The selective catalytic reduction system would be installed if gas generation exceeds approximately 50 million cubic feet per day.

Consistency with Local Requirements. The South Coast Air Quality Management District limits the emissions of various pollutants from many sources in the district, including landfill flares and other gas combustion devices. These rules will apply to the proposed project, and the project has been designed to comply with them. The applicable rules are described in Appendix E (Sierra Research 1990:101-105). The proposed action is expected to comply with each of these regulations.

The SCAQMD New Source Review rules (contained in Regulation II and Regulation XIII of the SCAQMD Rules and Regulations) govern the preconstruction review of new and modified stationary sources that emit nonattainment pollutants. The project site is located in the SEDAB, which is designated as unclassified for all pollutants with respect to the NAAQS. With respect to California ambient air quality standards, the desert portion of Riverside County (including the project site) is designated nonattainment for ozone and fine particulate matter (PM10) and attainment or unclassified for all other pollutants.

As a result of the state nonattainment status for ozone and PM10, the project must undergo New Source Review for these pollutants and their precursors. Therefore, direct and precursor emissions of PM10, as well as ozone precursors, are subject to New Source Review. SCAQMD Rule 1302 defines reactive organic gases and nitrogen oxides as precursors to ozone and reactive organic gases, nitrogen oxides, and sulfur oxides as precursors to particulate matter. New Source Review would not apply to emissions of carbon monoxide, for which state and federal air quality standards are being met.

In the evaluation of projects by the SCAQMD, related fugitive emissions are often included in the calculation of accountable project emissions. With respect to the proposed project, the district will not be permitting the landfill itself. Only the landfill gas collection and disposal (flare) system and the mineral (cover) processing plant will be permitted. District policy has held that the fugitive emissions from the landfill operation per se will not be included in the New Source Review analysis.

Furthermore, SCAQMD policy has been that only those mobile source emissions directly associated with a permit unit must be considered. Since the only permit units at the site will be the flares and the cover processing plant, the district staff has informally concluded that

emissions from on-site vehicles, as well as exhaust emissions from project-related cargo carriers (on-highway trucks and locomotives), will not be included in the New Source Review analysis.

Rule 1303 requires that the applicant apply BACT to any new or modified stationary source. In its Best Available Control Technology Guideline, the SCAQMD specifies the minimum control technology requirements for landfill gas flares. The guideline specifies two general alternative levels of control that would apply to the project emissions: (1) the use of control methods that are technologically feasible, barring a demonstration that the methods are not cost- effective or (2) the use of control methods that have been achieved in practice or are contained in an EPA-approved State Implementation Plan, regardless of cost. The likely BACT requirements for the proposed facility are discussed in more detail in the air quality technical appendix.

District Rule 1303 requires that the applicant offset all net emission increases from any new or modified facility. However, Rule 1309 provides that the offset requirement for emissions from landfill gas control equipment can be satisfied through withdrawals from a "Community Bank" of offsets. Since this rule was adopted in June 1990, it is not yet clear how this bank will operate.

Mitigation

No additional mitigation measures beyond those listed earlier are necessary to ensure consistency of the project with applicable regulatory programs. The application, permit review, imposition of control conditions, approval, and inspection process of the SCAQMD will serve to enforce the consistency.

Significance After Mitigation

No significant impacts relative to regulatory compliance would be associated with the project.

b. Reduced Landfill Operations Alternative

Impacts

Consistency with Federal Requirements. The determination as to whether the reduced operations alternative will be subject to PSD review is based on its emissions. As in the case of the proposed action, the "source" which could be subject to review includes the landfill gas flares and the mineral processing equipment. Except for a minor reduction in the emissions associated with on-site mineral processing equipment, the estimate of emissions for the proposed action would be applicable to the reduced operations alternative as well. The additional mitigation proposed for the flares under the proposed action would be applicable to

the reduced operations alternative as well and would result in that alternative's emissions being reduced to levels which would not require PSD review.

As in the case of the proposed action, the cover processing operations under the reduced operations alternative would be subject to, and is expected to comply with, the applicable federal New Source Performance Standards for Non-Metallic Mineral Processing Plants (40 CFR 60.670).

Consistency with Local Requirements. The SCAQMD limits the emissions of various pollutants from many sources in the district, including landfill flares and other gas combustion devices. These rules will apply to the reduced operations alternative, and this alternative would comply with them. The applicable rules are discussed in the air quality technical appendix.

SCAQMD New Source Review rules (contained in Regulation II and Regulation XIII of the SCAQMD Rules and Regulations) govern the preconstruction review of new and modified stationary sources that emit nonattainment pollutants. The discussion of this rule with respect to the proposed action would apply to the reduced operations alternative as well.

Mitigation

As with the proposed project, no additional mitigation measures would be necessary under the reduced operations alternative to insure compliance with applicable regulations.

Significance After Mitigation

No significant impacts relative to regulatory compliance would be associated with the reduced operations alternative.

c. Proposed Action With Rail Access Only Alternative

Impacts

The rail access only alternative would demonstrate consistency with applicable federal and local air quality requirements in the same manner as the proposed project and the reduced operations alternative.

Mitigation

As with the proposed project, no additional mitigation measures would be necessary under the rail access only alternative to insure compliance with applicable regulations.

Significance After Mitigation

No significant impacts relative to regulatory compliance would be associated with the rail access only alternative.

d. No Action Alternative

Impacts

It is assumed that existing landfill operations are in compliance with all applicable air quality rules and regulations. It is not clear whether the expansions required to continue accommodating the 20,000 tpd of waste which would otherwise go to the Eagle Mountain landfill would require additional air quality permits.

Mitigation

None is available with this alternative.

Significance After Mitigation

The significance of the potential impact relating to regulatory compliance by existing landfills that would be used under this No Project alternative cannot be assessed.

E. Land Use

1. Compatibility with Existing Land Uses

Assumptions and Assessment Guidelines. For the following environmental analysis, impacts will be considered significant if the proposed action presents a conflict with existing land uses in the Eagle Mountain community area.

a. Proposed Action

Impact

The proposed landfill and support facilities would not have a significant impact on the existing land uses within the project area. The East Pit and disturbed areas to the west would be progressively landfilled. The landfill would extend marginally beyond the present boundaries of the disturbed land associated with the mine, and a new railroad container handling yard would displace an existing area of open desert southeast of the East Pit. Existing open space uses are anticipated to be maintained along the margins of the site, and these areas may experience some adverse impacts of noise, light and glare, litter, and dust due to adjacent landfill activities.

Iron ore reserves within the East Pit have been largely depleted. Future mining for iron ore thought to exist east of the East Pit could be mined in conjunction with the landfill proposal, as part of its phased expansion which would assure that the most potentially minable iron resources are impacted last. During Sequence I (0 to 10 years), landfill operations would impact the East Pit - Midsection ore reserve area. Sequence II (11 to 75 years) landfill operations would affect the East Pit - West Extension ore reserve area. During Sequence III of landfill operations (years 76 to 85), the Central Pit reserve area would be impacted. The Final Sequence of landfill operations (years 86 to 115) would impact the extreme eastern portion of the East Pit deposits. Further discussion of mining and mineral resources impacts can be found below in the Geology section of this draft EIS/EIR.

Any future mining activities would benefit landfill development as overburden and plant tailing would be available to the landfill as cover material. In addition, mining excavations within the perimeter of the landfill would increase the availability of the landfill. If both the landfill development and mining operations were to occur, operation and maintenance costs such as the railroad, haul roads, electrical and water distribution systems, and maintenance and warehousing facilities could be shared. Other more remote mineral resources located to the west are not expected to be adversely impacted by the landfill.

Mitigation

Sequencing of the landfill operations will allow ample time to mine existing iron ore resources if they prove to be economical in the future. No other mitigation for making the project compatible with existing land uses is necessary.

Significance After Mitigation

Impacts on resource production uses are not considered to be significant, based upon the phasing attributes of the project. Thus, implementation of the proposed action would not be incompatible with existing land uses and would not result in a significant impact.

b. Reduced Landfill Operations Alternative

Impact

This alternative would result in the same type of impacts discussed above for the proposed action, but at a lesser scale of magnitude.

Mitigation

Mitigation is not determined to be necessary.

Significance After Mitigation

Impacts on resource production uses are not considered to be significant, based upon the phasing attributes of the project. Thus, implementation of the proposed action would not be incompatible with existing land uses and would not result in a significant impact.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would have essentially the same land use impacts as the proposed action.

Mitigation

Mitigation is not determined to be necessary.

Significance After Mitigation

Impacts on resource production uses are not considered to be significant based upon the phasing attributes of the project. Thus, implementation of the proposed action would not be incompatible with existing land uses and would not result in a significant impact.

d. No Action Alternative

Impact

With this alternative there would be no landfill development, and no impacts would occur.

Mitigation

No mitigation would be necessary, as no impacts would occur.

Significance After Mitigation

No significant issues would result.

2. Compatibility with Surrounding Land Uses

Assumptions and Assessment Guidelines. For the following environmental analysis, impacts will be considered significant if the proposed action presents a conflict with surrounding land uses in the Eagle Mountain community area.

a. Proposed Action

Impact

The project is expected to have no adverse impacts on currently active mineral resources exploration or mining in the area. Also, compatibility with residential, agricultural, or commercial land uses located in the Chuckwalla Valley around Desert Center or Lake Tamarisk is not considered a potentially significant issue because the nearest residence in Lake Tamarisk is nine miles and in Desert Center over ten miles.

Nevertheless, the project raises land use compatibility considerations of two types. The first is compatibility of the project with existing residential and correctional facility uses in the Eagle Mountain townsite. The second is its compatibility with existing open space and recreational uses on surrounding lands.

The first compatibility consideration involves the proximity of existing residential and correctional facility uses to the project and its anticipated noise, light and glare, traffic, litter, dust, and associated impacts. The existing return-to-custody facility is approximately 150 feet from the Eagle Mountain rail line at its closest point and approximately 1,200 feet from the Phase I container handling/maintenance and repair facility. Only the Phase I level of operations (two train trips per 24-hour day) would affect the RTCF. This would not represent a significant noise impact. When the Phase I container handling facility is moved to the Phase II container handling facility location, the maintenance and repair facility would continue to operate. Train operations at the repair and maintenance facility would be limited to no more than one train arrival and departure per day. Arrivals and departures would be limited to daytime hours. This would not represent a significant noise impact to the RTCF.

The landfill itself is planned to be 2,000 feet north and west of the closest part of the townsite and partially screened by the existing coarse tailing hill. Rail and truck access would be through or adjacent to the townsite, as would the processing area on the south rim of the East Pit. Solid waste handling and transportation would utilize equipment similar to that used during mining, but in fewer numbers. The landfilling itself is planned to occur at the west end of the site and below the rim of the East Pit for the first few decades of operation. As the landfill progresses, it will be elevated several hundred feet above the rim and the tailing hill will be lowered as it is used for cover material. Eventually, the working face of the landfill will be directly in view from the townsite. Treatment of the interface area along the south edge of the project is a key consideration of land use compatibility with the townsite uses.

The second compatibility consideration involves how the project would relate to existing open space and recreational uses of surrounding lands. Impacts of project-generated noise, light and glare, litter, and dust are discussed in Section IV.L., Noise, and Section IV.J., Visual, Recreation, and Wilderness Resources. These impacts are not deemed to be significant based on project location, which contains their effects, and project operational measures.

Mitigation

Land use incompatibilities with residential and correctional facility uses are anticipated to be mitigated to a level of insignificance by observance of development standards applicable to landfill planning areas immediately adjacent to the townsite. The standards include the following measures:

1) Restricting truck traffic bringing waste to the site and other heavy-duty vehicles to the proposed haul road only. Such truck and heavy-duty traffic shall not be permitted to use roads through the town of Eagle Mountain.

2) All buildings associated to the landfill shall have a minimum setback of 25 feet from the property boundary.

3) The height of all landfill structures, including buildings shall be no greater than 60 feet.

4) Views into the working areas shall be partially obscured by existing berms of coarse tailing materials or overburden for several decades.

5) Dust from excavation of the tailing piles shall be controlled as needed with the use of water trucks.

Measures to reduce the specific adverse impacts upon adjacent open space uses are addressed within the discussions of the identified impact topics.

Significance After Mitigation

Incompatibilities with residential and correctional facility uses are anticipated to be reduced to less than significant levels by mitigation measures listed above and implemented in the SP for the landfill. Land use incompatibilities associated with surrounding open space and recreational uses are not anticipated to be significant based on mitigation measures incorporated into the project and described in Section IV.L., Noise, and Section IV.J., Visual, Recreation, and Wilderness Resources.

b. Reduced Landfill Operations Alternative

Impact

Impacts would remain essentially the same as identified for the proposed action, although they would be reduced in intensity.

Mitigation

The same mitigation measures recommended for the proposed action would apply.

Significance

Incompatibility issues would be essentially the same as for the proposed action, but they would be reduced to levels of insignificance by the recommended mitigation measures.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would have essentially the same impacts as the proposed action, but with the reduction of traffic impacts and incrementally more intense rail-related impacts.

Mitigation

The applicable mitigation measures would be the same ones recommended for the proposed action.

Significance

Incompatibility issues would be reduced to levels of insignificance by the mitigation measures recommended above.

d. No Action Alternative

Impact

The site would remain in its present state, and no land use impacts would occur.

Mitigation

No mitigation is deemed necessary in this case.

Significance

No land use impacts would occur, and no incompatibility issues would arise.

3. Consistency with Plans and Policies

Assumptions and Assessment Guidelines. For the following environmental analysis, impacts will be considered significant if the proposed action or project presents a conflict with existing plans and policies of the County of Riverside, the Bureau of Land Management, the National Park Service, or the Metropolitan Water District.

County of Riverside

The project would not have a significant adverse impact on existing County land use plans, assuming a finding of consistency with the Comprehensive General Plan. Currently, the proposed action is not consistent with the General Plan Open Space and Conservation Map land use designation of Mineral Resources for the East Pit area. The project is also not consistent with the text policy for the Eagle Mountain area, which proposes open space uses and possible reactivation of mining uses but which makes no mention of landfilling the East Pit. In addition, the existing zoning designations do not permit the proposed landfill on the site.

Because of these General Plan map and text policies, as well as the lack of conducive zoning permitting the landfill and establishing standards for its operation, the project includes a General Plan Amendment, application of a change of zone to the SP zone designation, and preparation of a Specific Plan.

Given these amendments, this proposal does not appear to be in serious conflict with any other general goals, standards, or policies of the General Plan. The project would be potentially consistent with the Desert and Mountainous Areas designation which surrounds the East Pit area, as well as the Category III designation of the townsite area. The townsite meets the locational, water and sewer, and circulation policies of a Category III land use; however, the existing dwelling units have been constructed at a density greater than that allowed for Category III land uses. Landfills are permitted in this land use category.

The Eagle Mountain townsite is not a part of the project. A separate specific plan will be developed for the townsite at a future date. Actual consistency determinations need to be made by the County after their review of the Eagle Mountain townsite specific plan and its compliance with the general environmental goals stated in the General Plan.

Concerns about the relationship of existing residential units to the landfill have been noted in the previous section. Since existing plans and policies promote very low residential densities and compatible land uses surrounding the project site, this impact would not be accentuated in the future and the findings concerning absence of incompatible land uses could be made, as required by the CoSWMP.

Future (post-closure) land uses of the site have not yet been determined. At present, it is anticipated that the inactive landfill would be developed for passive recreational or open space uses which would be compatible with recreational and open space uses existing and anticipated in the surrounding area.

Bureau of Land Management

The project is not anticipated to have any significant adverse land use impacts upon the CDCA Plan or other BLM plans and policies. The land exchange will divest the BLM of reversionary interest in the Eagle Mountain townsite and exchange lands in the project area for biologically valued lands along the Chuckwalla Bench and within the Salt Creek acquisition area. The project is in keeping with the intensity of use prescribed for the project vicinity by the M and I land use classifications of the CDCA Plan. The project is in keeping with the multiple use class guidelines (BLM 1980:Table 1).

Under the classification guidelines, the proposed use of the rail and road rights-of-way to serve the project does not conflict with BLM plans, policies, and programs. Impacts from the use of rail on desert tortoise habitat in the Chuckwalla Bench is presented in the biology section.

The project's effects upon the BLM boundary modifications proposed to incorporate land to the south and west into Joshua Tree National Monument would present a potentially significant land use conflict, especially if the Eagle Mountains alternative is selected and the land adjacent to and including the western edge of the project area is transferred to the NPS for inclusion into the national monument. The impact is somewhat mitigated by the fact that the part of the project area in question is a buffer area under the SP and that it would be managed as an open space resource as part of the project's perimeter.

National Park Service

The proposed action is not anticipated to conflict with the use of Joshua Tree National Monument within the Natural Environment or Wilderness subzones. These portions of the monument in proximity to the project site are only accessible to backpackers during the winter. Summer temperatures are too extreme to permit recreational access. Lighting from past mining activities was visible to hikers. Although the applicant is not proposing nighttime landfill operations except for the unloading facilities, such lighting and security lighting from the landfill could be visible (a further discussion of this impact is contained in Section IV.J., Visual, Recreation, and Wilderness Resources). Because of the distance of mining/landfilling operations and the depth of the pit in providing a natural berm, project noise is not anticipated to be audible in the monument (see Section IV.L., Noise). Regarding the project's relationship to plant and animal life within the monument, see the biology section of this draft EIS/EIR.

Metropolitan Water District

The MWD Colorado River Aqueduct and pumping station are not expected to be adversely impacted by the project. Although the aqueduct is uncovered northeast of the project site, water contamination by any measurable quantity of airborne dust or litter is not considered likely based upon operations procedures incorporated into the project to mitigate these impacts (see the Visual, Recreation, and Wilderness Resources section of this draft EIS/EIR).

a. Proposed Action

Impact

Impacts on plans and policies of the agencies mentioned above are generally not expected to be significant, assuming findings of consistency and amendments as proposed. Existing and proposed NPS and BLM plans for wilderness and recreational uses of the Pinto Basin and Eagle Mountains north and west of the project site are not anticipated to be significantly impacted by the project. No deterioration of wilderness values of designated wilderness areas are anticipated based upon the distances from the landfill to wilderness boundaries and mitigation measures to reduce noise, light and glare, and litter and dust impacts.

Mitigation

The proposed action includes a County General Plan Amendment, zone change, Specific Plan, and BLM/Kaiser land exchange. Upon implementation, consistency with agency plans and policies is expected, and therefore, impacts are considered insignificant.

Significance After Mitigation

Impacts on plans and policies of the affected agencies are generally not expected to be significant, assuming findings of consistency and amendments as proposed.

b. Reduced Landfill Operations Alternative

Impact

Impacts on agency plans and policies would be essentially the same as in the proposed action.

Mitigation

Mitigation measures would be the same as for the proposed action.

Significance After Mitigation

Impacts on plans and policies of the affected agencies are generally not expected to be significant, assuming findings of consistency and amendments as proposed.

c. Proposed Action with Rail Access Only Alternative

Impact

Impacts on agency plans and policies would be the same as those of the proposed action.

Mitigation

Mitigation measures would be the same as for the proposed action.

Significance After Mitigation

Impacts on plans and policies are considered to be insignificant.

d. No Action Alternative

Impact

No changes to existing land uses would occur. Existing land uses are considered to be consistent with all agency plans and policies, so this alternative would have no adverse impacts.

Mitigation

No mitigation measures would be necessary.

Significance After Mitigation

No land use impacts would occur, and no incompatibility issues would arise.

4. Collection/Transfer Stations and Rail Transport Land Use Compatibility

New and existing transfer and collection stations will be located throughout the wasteshed area. Since their exact locations to serve the Eagle Mountain landfill are unknown at this time, specific existing land use conditions and impacts associated with this aspect of the project are not addressed. The siting of each facility will be the subject of land use, zoning, and environmental review and approvals by the affected local agencies. In general, these stations are expected to be located in conjunction with existing landfill or recycling facilities or on new sites on or near rail lines. These facilities could require up to 30 acres and be enclosed within a structure as large as 100,000 square feet. Potential land use considerations include comparability with existing and planned surrounding uses, which involves evaluation of noise, odors, dust, visual impacts, increased truck and rail traffic, and other site-specific impacts.

Land use impacts along the rail corridors that would be used to transport the solid waste to the site are anticipated to be negligible and are determined to be insignificant. This is based upon the fact that rail lines are existing and represent established land use relationships that would not be adversely affected by the minor increase in train traffic anticipated for any specific rail line. Other specific impacts along the rail line network, such as traffic and noise, are addressed separately in this draft EIS/EIR.

F. Surface Drainage/Flooding

Assumptions and Assessment Guidelines. The Eagle Mountain area is subject to flash flooding in the desert alluvial fans and washes. For the following environmental analysis, surface drainage impacts will be considered significant if the proposed project alters surface drainage patterns to such an extent as to result in increased runoff and erosion and in flooding and flood-related hazards. Impacts would also be considered significant if the project were to be in violation of the policies of the Riverside County Flood Control District.

1. Proposed Action

Impact

The total watershed area, in terms of size, would be largely unchanged from pre-landfill to post-landfill conditions, and the total flow generated from a given size storm would remain unchanged. However, the reclamation of the East Pit by the disposal of solid wastes would reestablish drainage patterns that existed prior to mining operations. Runoff currently flows into the pit and would either percolate into the ground or evaporate. In the future, runoff from the landfill would flow in reestablished natural drainage courses to the alluvial areas to the east of the Phase II handling area where it would percolate or evaporate.

The peak flow rate calculated for the final landfill contours may decrease with time due to settlement. Since the landfill surface will flatten with time, the flow velocity will decrease. Decreased flow velocity means increased time of concentration, which produces a reduced peak flow rate at downstream points.

Upon implementation of landfilling operations, storm flows will be diverted around the East Pit. If the water is conveyed around the landfill, drainage impacts to the area east of the site are possible. These could include flooding, erosion, and debris deposition.

Without incorporating adequate drainage measures, there is a possibility that the southeasterly drainage flow pattern could be reestablished as flows are diverted around the landfill. This would increase the potential for flooding of the town. Sheet flows across the existing maintenance facility, rail line, and Yucca Drive could be expected. Flooding damage at residences along Yucca Drive is also possible. Although Kaiser Road provides an alternate access to the areas served by Yucca Drive, Kaiser Road is subject to washout at the fork of the two roads.

The area east of the landfill site may be impacted due to concentrated flows at the northern toe of the landfill. These flows could enter the flat eastern area at higher velocities than pre-landfill conditions. Therefore, potential impacts include erosion and effects to plant and animal

wildlife. Similar impacts may result if storm water is concentrated along the southern toe of the landfill.

As the specific plan outlines, the drainage plan would provide two landfill perimeter drains and an improved drainage system through the town, so that upstream drainage will be conveyed past the landfill and town areas to a point where it can be safely discharged into the natural flow paths downstream. The southern toe of the landfill is designed outside of and above the 100-year floodplain limits. Openings would be constructed at the two blocked sections in Eagle Creek: one at the mouth of the main confluence and one at the creek neck just downstream of the main confluence (see Figure 56). These openings would be sized to pass the runoff from a 24-hour, 100-year rainfall frequency event.

The northern perimeter drain would be a lined open trapezoidal channel which collects flows from the landfill surface and northern canyons tributary to the landfill toe. The southern perimeter drain would also be a lined open trapezoidal channel that would collect flows from the landfill surface only.

The permanent southern channel would be approximately 18,500 feet long, and the northern perimeter channel would be approximately 16,500 feet long. The channel bottom width would be 20 feet and the top width would vary from 26 to 40 feet (see Figure 27). The depth of flow in the channel would range from less than one foot to approximately four feet. Both channels would be sized to contain runoff from a 24-hour, 100-year rainfall frequency event, plus a two-foot freeboard allowance. The permanent drainage system for the diversion of storm water from the refuse fill will be constructed in stages to protect areas which reach final elevations.

Both landfill drains would discharge east of the site through wing-walled energy-dissipating outlet structures. The flow velocities would be reduced to noneroding conditions.

The proposed private/public land exchange alone would not have a direct effect on the drainage in the project area because development would not be a factor. Improvements to the Eagle Mountain Road and extension and the Eagle Mountain rail line are planned as part of the proposed action. These improvements would be designed in accordance to the development standards stated in the specific plan (September, 1990), which includes compliance with the requirements of the September 1984 MOU between Riverside County, the Riverside County Flood Control District, and the Water Conservation District as well as with the requirements of the California Regional Water Quality Control Board.

The relevant regulatory stipulations to be complied with by the proposed landfill include the state (Title 14 of the California Code of Regulations) and federal (RCRA Subtitle D, the "open dump" criteria) regulations requiring that the landfill be protected from flooding or washout from a 24-hour, 100-year storm. Further, CCR, Title 23, Chapter 15, regulations require a

minimum final slope to facilitate drainage and hence minimize infiltration of water into the landfill and subsequent potential degradation of groundwater quality.

Thus, a complete perimeter drainage system (see Figure 27) would be installed to collect drainage which would otherwise run onto the site. This drainage will be directed around the landfill for discharge to the alluvial areas to the east. The final landfill slope would meet the Chapter 15 minimum of three percent.

As the site filling progresses, temporary drainage control measures would be utilized to prevent run-on from reaching areas of waste deposition or active fill areas. These temporary measures would be incorporated into the site operational plan and subject to review by the regulatory oversight via the state's periodic review process.

Mitigation

Potential impacts to surface drainage would be avoided due to the incorporation of the project design features, which include a design plan consistent with the stipulations of the County Flood Control District. In addition, the final landfill slope would be a minimum of three percent.

Significance After Mitigation

The proposed action would not result in any significant impacts to surface drainage or flooding.

2. Reduced Landfill Operations Alternative

Impact

The potential drainage impacts of this alternative would be similar to those associated with the proposed action.

Mitigation

No mitigation would be required other than the measures incorporated into the project design.

Significance After Mitigation

No significant impacts to surface drainage or flooding would result.

3. Proposed Action with Rail Access Only Alternative

Impact

The drainage impacts of this alternative would be the same as those associated with the proposed action.

Mitigation

No mitigation would be required other than the measures incorporated into the project design.

Significance After Mitigation

No significant impacts to surface drainage or flooding would result.

4. No Action Alternative

Impact

Under this alternative, the existing conditions would not change, and drainage from upstream areas would continue to flow to the East Pit. Culverts would continue to fill with sand. The Kaiser Truck Trail would continue to erode, and portions of the railroad could wash out.

Mitigation

No drainage impacts would occur, and no mitigation would be needed.

Significance After Mitigation

No significant impacts would occur.

G. Biological Resources

The following section is divided into subsections listing the most sensitive biological issues first. The subsections describe the impacts, mitigation, and effects of each alternative to sensitive biological resources found or potentially occurring on the site. These subsections are:

- Desert tortoise
- Nelson's bighorn sheep
- Desert pupfish
- Other sensitive wildlife
- Sensitive plant species
- Major washes and drainages

1. Desert Tortoise

Assumptions and Assessment Guidelines. Impacts to desert tortoise were determined to be significant or insignificant based upon the sensitivity of the species on the various portions of the project site and the legal requirements governing mitigation of impacts such as the federal and state Endangered Species Acts. Impacts to tortoises were considered *take* under the federal Endangered Species Act, which is defined as actions which ". . . harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. 1538 [1973]). Habitats supporting tortoises or falling within any of the three categories for desert tortoise management by BLM were considered significant resources. All impacts to tortoises and their habitat (including BLM categorized lands) were considered significant unless the impact could be determined not to cause a detrimental effect on the survival of individual tortoises or their populations. The potential for various types of impacts to occur to desert tortoises exists. These potential impacts include injuries or deaths from collisions with trains and trucks, loss of habitat, vandalism to tortoises and their habitat, increased predation by ravens, reduction in habitat quality, accidents and burial during construction, impairment of physical and reproductive functioning, and population fragmentation.

Information used to determine impacts to tortoises include field survey results, published literature, biological assessments, agency reports, and personal conversations with desert tortoise experts.

a. Proposed Action

Impacts

A summary of the impacts to tortoises is included in Table 40. Significant impacts to desert tortoises in the project area and significant potential cumulative impacts to the tortoise

TABLE 40
SUMMARY OF SIGNIFICANT IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES AND THEIR MITIGATION AT THE EAGLE MOUNTAIN MINE PROJECT

Species	Impacts	Significant Habitat (acres) Impacts	Mitigation
		LISTED SPECIES	
Desert tortoise	Permanent loss of individuals and habitat, increased raven predation, harrassment of individuals (noise and vibration)	150	Preoperation surveys, monitoring, raven control plan, rail and road barriers and culverts, employee education, off-site habitat preservation (375 ac)
Desert pupfish	Potential loss of individuals and habitat, degraded habitat	<1	Monitoring program, emergency accident plan, construction design modifications
		OTHER SENSITIVE SPECIES	
Foxtail cactus	Loss of many individuals at mine, storage	158.3	Transplant program designed to relocate individual Alverson's foxtail cactus to areas to be rehabilitated within the proposed landfill site
Bat species*	Potential loss of roosting areas, hibernacula		Monitoring of bat roost sites, and maintenance of adit opening
Nelson's bighorn sheep	Loss of 4 water sources, loss of habitat, stress from noise and other human activity	994	Create and enhance off-site water sources, monitoring program, on-site habitat preservation (644 acres)
Eagle Mountain scrub jay	Possible increased raven predation on nestlings	371	Raven monitoring and control program

*See text for description of species.

population in the Chuckwalla Valley will occur with the implementation of the landfill at Eagle Mountain. Impacts include loss of individuals and habitat, harassment, population fragmentation, and potential increased raven predation.

Desert tortoises currently occupy habitat immediately adjacent to and sometimes within the Eagle Mountain railroad bed. Because of this, impacts to desert tortoises could occur with the resumption of maintenance and regular rail service. Maintenance and restoration to prepare the rail line for service will consist of minor repairs and replacement of segments of rail and ties and cleaning out culverts which pass water under the railroad bed. These activities could affect tortoises by burying them in burrows within the railbed and burying unoccupied burrows. Unoccupied burrows are an important resource for tortoises because they move from burrow to burrow and use the burrows to escape inclement weather. These impacts will be temporary and will occur periodically along 10 miles of railroad through BLM Category 1 desert tortoise habitat, 18 miles of Category 3, and 24 miles of uncategorized habitat.

During routine maintenance activities along the railroad, the storage of equipment and material, parking of vehicles, and other staging activities would be confined to previously disturbed areas at Ferrum Junction, Red Cloud, and Summit. Thus, no impacts are anticipated from materials storage.

Reintroduction of rail traffic on the Eagle Mountain rail line would likely cause the loss of a small number of tortoises due to train kills. Tortoises will occasionally attempt to cross railroad tracks, thus increasing their chances of a fatal train encounter. The loss of tortoises from train kills would be a significant impact.

Significant impacts to desert tortoise habitat will occur with improvements and widening of Eagle Mountain Road and with the building of the extension of Eagle Mountain Road and the rail spur. Eagle Mountain Road will be widened from its current width of 20 feet to 40 feet, within a 110-foot-wide right-of-way. These road improvements will be carried out over a seven-mile length of the right-of-way, from I-10 north. Assuming a worst-case scenario, where the entire right-of-way is disturbed, 76.4 acres of Category 3 tortoise habitat would be lost. The Eagle Mountain Road Extension and rail spur are a continuation of the Eagle Mountain Road 110-foot-wide right-of-way. The proposed 40-foot-wide road extension follows a current 15-foot-wide dirt road for 3.5 miles and creates a totally new road for 2.5 miles, where it ends at the Phase II handling yard. The new rail spur is also within this proposed 110-foot right-of-way for its final 2.5 miles. Again, assuming that the entire 110-foot right-of-way will be disturbed, a total of 73.6 acres of tortoise habitat would be lost. Therefore, for all road improvements and road and rail construction, a total of 150 acres of Category 3 desert tortoise habitat would be permanently removed by the project (see Table 40). An increase in the potential for desert tortoise road kills will occur from the increased truck traffic on Eagle Mountain Road. Such road kills are likely to reduce tortoise densities for a distance of

one-quarter to one-half mile on both sides of the road, unless effective barriers are placed along the road in all areas where tortoises occur.

Indirect impacts to tortoises may occur if landfill operations promote an increase in the local raven population. Ravens are scavengers, usually depending on carcasses of native animals for food. The landfill could potentially provide a large food source for the ravens and the raven population could respond by increasing. Ravens are known to prey on juvenile tortoises, and an increased raven population may result in more deaths in this juvenile segment of the tortoise population within the project area and within the nearby Chuckwalla Bench area where tortoise populations are high.

Other potential indirect impacts resulting in losses to tortoises include physiological impairment due to the effects of noise and vibration along the active rail line, as well as population fragmentation. Recent evidence (see Appendix F) indicates that tortoises are very tolerant of noise and vibration from railroad activity. Active tortoise burrows have been found in significant numbers in the berms of active rail lines (over 20 train passages per day) in the Mojave Desert of California. Therefore, significant impacts to tortoises from noise and vibration are not expected. The resumption of rail operations may restrict tortoise movement across the tracks or in the immediate vicinity of the tracks. If movement of reproductively active tortoises is restricted by the tracks, gene flow and long-term population viability within the Chuckwalla population could be threatened.

Mitigation

Impacts from displacement and habitat loss along the truck route will be reduced to below a level of significance by a combination of permanent preservation of high-quality habitat within the area, and other measures outlined below. Other significant impacts to desert tortoises will be reduced to below a level of significance by incorporating mitigation measures in this section. All mitigation measures will be incorporated into a Section 7 consultation and U.S. Department of the Interior (DOI), Fish and Wildlife Service, Biological Opinion and CDFG 2081 MOU for implementation.

Preconstruction Survey and Monitoring. Repair and replacement of all permanent structures or features, such as railroad tracks and culverts, within tortoise habitat will be monitored by a qualified biologist. A preconstruction survey will be conducted prior to maintenance and construction activities and immediately prior to regular railroad and roadway use. Desert tortoise population monitoring programs will be conducted to determine the level of impacts caused by railroad and road operations. Monitoring will begin approximately one year prior to rail and road service and will continue throughout the life of the project or until the USFWS and BLM deem further monitoring unnecessary.

Excavation of Tortoise Burrows and Translocation of Tortoises. Tortoise burrows in the railroad berm will be located and monitored during the repair and maintenance phases of track preparation. Tortoises, either aboveground or in burrows, found to be threatened by track rehabilitation activities will be translocated to a place at least 300 feet from the rail corridor, but on the same side of the tracks. This translocation distance would likely keep the tortoise within its home range, thus increasing its chances for survival. The handling and removal of tortoises will be conducted by a qualified biologist approved by USFWS and BLM.

Culvert System for Tortoise Movement under the Railbed and Eagle Mountain Road. A system of culverts and other structures will be placed under the railbed to allow tortoises to cross under the railroad. Existing culverts will be made appropriate for tortoise use by placing the culverts level with the desert floor on both ends and covering the bottoms with soil. Additional culverts will be placed in areas to be determined by the baseline tortoise surveys and decided by BLM and USFWS. A system of culverts and other structures will also be built under Eagle Mountain Road. The road system's culverts will be based on the same plans as the railroad culvert system. The effectiveness of these crossings as passages for tortoises will be monitored concurrently with the tortoise population and raven monitoring programs. The culvert system would reduce potential impacts of population fragmentation to a level below significance.

Desert Tortoise Protective Barriers. Desert tortoise protective barriers, as described in the mitigation plan (see Appendix F), will be placed on each side of the railroad tracks in high tortoise density areas. Barrier designs and placement will be approved by USFWS. All of Eagle Mountain Road within desert tortoise habitat will be provided with barriers. Barriers will also be designed to guide tortoises to culverts. These barrier/culvert systems would reduce impacts from train/truck kills to a level below significance.

Dedication of Habitat for Open Space and Conservation. Habitat lost due to widening of Eagle Mountain Road and construction of the road extension and rail spur will be mitigated by the purchase of 375 acres of desert tortoise habitat for transfer to permanent BLM ownership. The number of acres of compensation is based upon the BLM's habitat compensation formula (calculated as 2.5:1). The exact parcel(s) to be purchased for compensation will be selected by BLM.

Raven Control and Monitoring. To minimize impacts by ravens, the raven population will be controlled. A raven population monitoring program will begin approximately one year prior to the beginning of landfill operations and continue throughout the life of the project or until the federal agencies determine that it is no longer necessary. A passive raven control program will be introduced as soon as the landfill begins operation to avoid raven predation problems as early as possible. Passive control will include daily trash burial at the end of each workday, and other nonlethal measures to minimize raven feeding at the project site. These measures may include conditioned taste aversion, raven nest destruction, perch site reduction, and other

measures developed in consultation with BLM, USFWS, and CDFG. In addition to these actions, the feasibility of closing the Desert Center landfill is being investigated. This county-operated refuse dump is currently used by several ravens, and its closure would remove one local source of food material. If, through the monitoring program, the raven population is found to be increasing, an active raven control program (raven destruction) will be initiated with prior approval from BLM and USFWS. A detailed raven control plan, plus the appropriate permits, will be developed and in place before landfill operations begin. All programs will be undertaken in conjunction with USFWS, BLM, and CDFG and with the Raven Management Plan for the California Desert Conservation Area (BLM 1990). If possible, this program shall be developed with the cooperation of Joshua Tree National Monument.

Worker Education Program. A worker education program will begin before implementation of the landfill operation. The program shall emphasize the legal protections afforded sensitive species and measures to minimize impacts to those species and their habitats. The program will include a handbook outlining the details of the protections and measures to be followed by each employee. The program will be extended to contracted truck drivers delivering solid waste to the project site, to increase awareness of potential desert tortoise occurrence along Eagle Mountain Road and to receive any reports of tortoise sightings or road kills for prompt removal.

Significance After Mitigation

All temporary and permanent impacts to the desert tortoise and/or its habitat will be reduced to below a level of significance by incorporating the mitigation measures described above.

b. Reduced Landfill Operations Alternative

Impacts

Impacts to tortoises will remain the same as the proposed action.

Mitigation

Mitigation measures are the same as those listed above for the proposed action.

Significance After Mitigation

Mitigation measures will reduce significant desert tortoise impacts to a level below significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

Potential impacts to tortoises from incidental road kills will be reduced by eliminating truck traffic on the Eagle Mountain Road. Permanent impacts to 150 acres of Category 3 tortoise habitat will be avoided and individual losses due to the Eagle Mountain Road construction will not occur. Impacts to tortoises from predation will be reduced because fewer road kills to be scavenged by ravens and other predators will occur, thus reducing the level of attraction for these birds to the site. Significant impacts similar to the proposed action remain due to landfill operation and railroad service.

Mitigation

No permanent desert tortoise habitat will be lost because Eagle Mountain Road will not be widened. Mitigation measures are the same as those listed above for the temporary impacts remaining along the railroad and the impacts associated with the landfill operation.

Significance of Mitigation

Mitigation measures will reduce significant desert tortoise impacts to a level below significance.

d. No Project Alternative

Impacts

No significant impacts will occur to desert tortoises.

Mitigation

No mitigation measures will be required.

Significance

The No Project alternative will not result in any impacts to the desert tortoise.

2. Nelson's Bighorn Sheep

Assumptions and Assessments Guidelines. Impacts to Nelson's bighorn sheep were determined to be significant or insignificant based upon the sensitivity of the species to disturbance and its legal status, as designated by the BLM and the CDFG. Loss of habitat, especially water

sources, was considered a significant impact. Also, indirect human-caused impacts such as noise, poaching, exposure to disease, and harassment were also considered potentially significant, with the level of significance depending upon the intensity of the impact.

a. Proposed Action

Impacts

Potential impacts to Nelson's bighorn sheep at the mine site will occur from loss of habitat and water sources, which could lead to stressful conditions within the sheep population and a reduction in habitat quality. Increases in the residential uses in the Eagle Mountain due to the increased employment opportunities provided by the project could also lead to indirect effects on bighorn sheep such as more exposure to human activity (including poaching), dogs, and domestic livestock. A summary of impacts is included in Table 40.

Certain features of the project will reduce the chance of sheep exposure to the landfill operation and minimize the impacts. Unlike an open unattended dump in the desert, where activity is low and sheep might frequent, the proposed landfill will be extremely active and the sheep are not expected to range close to the activity. Refuse at the site will be compacted by specialized equipment and covered with soil on a daily basis. No exposed refuse will be available to attract the sheep.

Three permanent and one temporary water source within the project boundary would be lost. One permanent water source to be lost is a pond created as part of the mining operation at the bottom of the East Pit. This water source is the least used and lowest quality of the permanent water sources in the project area. Two leaking water tanks on the south-central portion of the site are also currently used by bighorn sheep, but will be removed. The temporary source, a large depression which fills with rainwater, is located in the northeastern portion of the proposed action.

Impacts to bighorn sheep will occur with the loss of approximately 994 acres of previously undisturbed natural lands considered prime sheep range (Weaver, pers. comm. 1990; Armentrout, pers. comm. 1990). Much of this habitat is on public-selected lands on the landfill site. The component of sheep habitat that is limiting the population in the Eagle Mountains is available water, not forage. There is an abundance of foraging habitat in the Eagle Mountains, but what makes the area around the landfill site significant is the presence of permanent water. Loss of habitat forces sheep to use smaller areas around remaining water sources and may create more stressful conditions, which could lead to disease or decreased reproductive success. A few sheep bedding areas located within the perimeter of the landfill will be impacted as well.

Activity in the landfill site will cause impacts to bighorn sheep even though they may habituate somewhat to activity, as long as they are not threatened. Long-term impacts to sheep

populations in proximity to activities such as the landfill cannot be determined. During past mining operations, bighorn were still active in the mine area despite noise and human activity. Loss of the disturbed portions of the Eagle Mountain Mine site are not considered significant, except to water sources and bedding areas, since those areas do not now offer foraging habitat for the sheep.

The project will introduce 160 employees to the area and some employees would be expected to live in the Eagle Mountain Mine townsite. Indirect impacts to sheep may occur by the increase in activity around the townsite, including harassment by dogs and exposure of sheep to livestock-related diseases (Armentrout, pers. comm. 1990). Impacts may occur to sheep with increased access for humans to the Eagle Mountains.

No significant impacts to bighorn sheep are expected to occur along the railroad corridor. The habitat is not prime sheep range and is a long, narrow strip. Only one case of rail death has been observed in California (Bleich, pers. comm. 1990), and therefore, sheep are not expected to be directly injured or killed by moving trains. A significant impact could occur if sheep movement between ranges is disrupted by regular rail operation. Sheep populations in the Chocolate and Orocopia mountains could be affected by restricted gene flow if the sheep refuse to cross the rail line. However, this scenario is not expected to occur. Bighorn sheep corridors are shown in Figure 89 (BLM 1980).

Mitigation

Mitigation measures are designed to eliminate attractiveness of the proposed landfill to bighorn sheep and to compensate for the loss of habitat. Other mitigation measures may be required based on the results of monitoring and further studies which will analyze the effects of landfill operations on bighorn sheep.

Monitoring Study. A two-year monitoring study will be conducted to assess bighorn sheep movements in the vicinity of the Eagle Mountain landfill site. Approximately 17 sheep, mostly ewes, will be radio-collared and tracked by telemetry to gauge home range sizes of bighorn. Monitoring will begin at least one year prior to the beginning of landfill operations. The goal of the monitoring study is to identify new locations to place permanent water sources.

Installation of Permanent Water Sources. The loss of three permanent water source and one temporary water source is considered a significant impact. Three new permanent water sources, ensuring year-round water availability, will be placed far from the mine site to encourage bighorn sheep to use the surrounding natural areas rather than the project site. These water sources will compensate for the loss of the three permanent water sources. The sites for the water sources and their design will be located and approved by biologists at BLM and CDFG. In addition, Buzzard Springs will be rehabilitated and cleared of tamarisk, which will compensate for the loss of the temporary water source. As discussed above, monitoring of

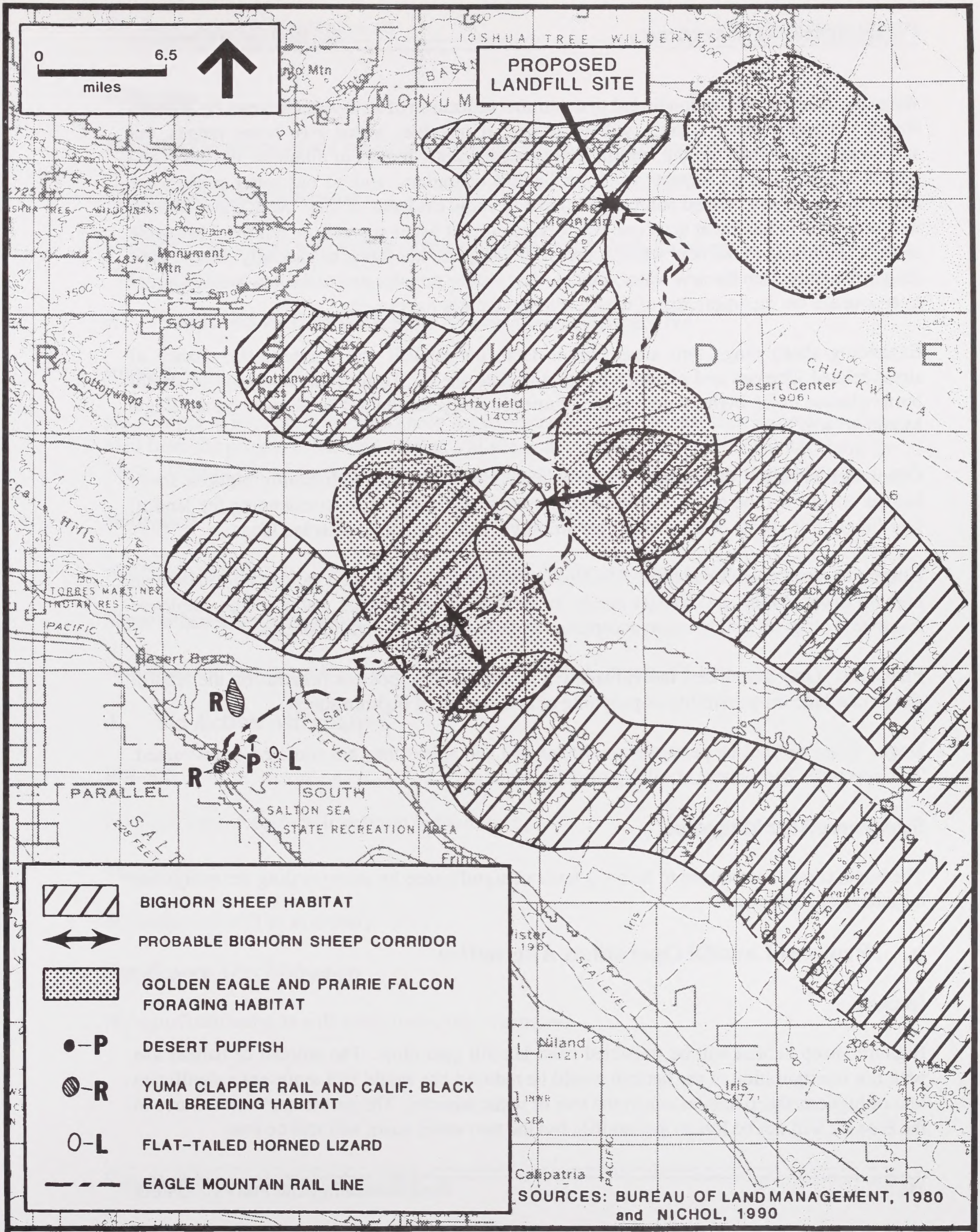


FIGURE 89. HISTORIC RECORDED DISTRIBUTION OF SOME WILDLIFE SPECIES OF SPECIAL CONCERN

RECON

sheep movements will be conducted to determine utilization of new water sources by bighorn sheep. The new water sources will be placed, if possible, within ewe home ranges, but sufficiently removed from the landfill area to significantly reduce or eliminate the noise and human activity–related impacts from the landfill operation. Before old water sources are removed, the newly created sources will have to show evidence of use. New water sources will be placed in habitat at least one year before current water sources are removed to enable sheep to habituate to the new water sources. If sheep are not found to naturally expand their ranges to incorporate the new water sources, they will be translocated to the new water sources to encourage the incorporation of these sites into their home ranges.

Expanding sheep range into areas remote from the landfill will decrease the chance of stress-related illnesses and of contact with domestic sheep. To prevent the spread of sheep-borne disease to the bighorn population, domestic sheep should not be allowed on the Eagle Mountain site.

Other Preservation of Habitat. Approximately 644 acres of high-quality bighorn sheep habitat on-site will be preserved within the open space buffer areas surrounding the landfill (see Figure 89). Most of this habitat is currently located on public-selected lands.

Employee Awareness Program. An employee training program shall include information on bighorn sheep habits and habitat needs, as well as their protected status. This employee awareness program will increase acceptance and knowledge of bighorn sheep.

Firearms. Only authorized individuals will be permitted to possess firearms on the landfill site to preclude the possibility of poaching or harassment of bighorn sheep.

Dogs. Dogs will not be permitted on the landfill site unless they are confined or restrained. This precludes harassment or killing of sheep by dogs.

Significance After Mitigation

The impacts will be reduced to below a level of significance by incorporating the mitigation measures listed above.

b. Reduced Landfill Operations Alternative

Impacts

Bighorn sheep habitat will be impacted from landfill operation. The amount of habitat lost with this configuration of the landfill would be reduced but would still represent a significant loss of bighorn sheep habitat due to the loss of water sources. The permanent water source in the East Pit will not be lost to the landfill, but the two water tanks will still be lost.

Mitigation

Mitigation measures would be the same as listed above for the proposed action.

Significance After Mitigation

Mitigation measures will reduce significant impacts to bighorn sheep to a level below significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

No changes in impacts to bighorn sheep are expected to occur because the elimination of the road from the project is the only change and sheep do not currently use the habitat along the Eagle Mountain Road corridor, and no known movement corridors exist across the road.

Mitigation

Mitigation measures will remain the same as those for the proposed action.

Significance After Mitigation

All impacts to bighorn sheep will be reduced to a level below significance.

d. No Action Alternative

Impacts

No significant impacts will occur to bighorn sheep.

Mitigation

No mitigation will be necessary.

Significance After Mitigation

No significant impacts will occur under this alternative.

3. Desert Pupfish

Assumption and Assessment Guidelines. Impacts to desert pupfish were determined to be significant or insignificant based upon the sensitivity of the species at the tributary of Salt Creek and the legal requirements governing mitigation of impacts such as the federal and state endangered species acts. Impacts to pupfish were considered *take* under the federal Endangered Species Act, which is defined as actions which ". . . harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. Section 1538 [1973]). All habitat supporting pupfish or considered pupfish habitat by CDFG was considered significant.

Basic assessment guidelines used to determine impacts to desert pupfish are the results of field surveys, agency reports, and personal communication with agency staff.

a. Proposed Action

Impacts

A summary of impacts and mitigation measures is listed in Table 40. Pupfish were observed in a Salt Creek tributary in 1982 (Nicol, pers. comm. 1989) a time near the end of several decades of train operations. Although earlier surveys were not intended to specifically assess the effect of the rail operations on the pupfish habitat, it is apparent that the pupfish population continued within the streambed immediately under the railroad trestle for some time. The frequency and length of trains anticipated with the proposed landfill are approximately the same as in the former mining operation. Therefore, no significant changes are anticipated in the overall quality of the habitat.

Because trash will be fully contained in closed containers, no trash will escape during train travel and no impacts are expected to occur to pupfish or their habitat from solid waste discharges. However, direct and uncontrollable impacts may occur to pupfish if there is an accident along the trestle during rail operations. Furthermore, it should be expected that sometime during the 100-year life of the project maintenance or reconstruction of the trestle will become necessary. Major construction activities in the immediate area of pupfish habitat could have a significant impact.

Mitigation

Mitigation for potential impacts to pupfish habitat include monitoring the pupfish population in the Salt Creek system, development of a mitigation program for impacts caused by maintenance activities, and monitoring by a biologist of emergency cleanup operations. These mitigation measures will be incorporated into Section 7 consultation and DOI Biological Opinion and CDFG 2081 MOU for implementation.

Monitoring. Annual surveys of the pupfish populations and habitat will continue along Salt Creek and its tributary under the train trestle. Although no significant changes are expected, in the event there are any effects on the habitat which are caused by the train operations, these will be reported to MRC and corrective actions will be developed in consultation with USFWS and CDFG.

Maintenance Activity Mitigation. If maintenance of the trestle or railroad in the Salt Creek tributary must occur, mitigation measures will be incorporated into the project plans to reduce potential impacts to desert pupfish. Plans for construction or major maintenance will be reviewed by a biologist and will include designs and specifications that will avoid impacts to desert pupfish. Storage and staging areas will be placed in locations which will not affect the habitat, and measures to avoid any discharge of pollutants will be incorporated.

Emergency Response. In the event any rail accidents occur in the vicinity of desert pupfish habitat, a biologist will be included as a response and cleanup team member. The cleanup operations will be monitored by the biologist so that additional adverse impacts are not incurred by the cleanup operation. Measures to restore the pupfish habitat in Salt Creek and its tributary in the event of an accident shall be incorporated as part of the response. If restocking of pupfish is required in the aftermath of an accident, the nearest suitable genetic strain of pupfish will be the source of the transplantation.

Significance After Mitigation

The impacts to desert pupfish described above will be reduced to below a level of significance by incorporating the mitigation measures listed above.

b. Reduced Landfill Operations Alternative

Impacts

Impacts to desert pupfish resulting from this alternative would be the same as the proposed action.

Mitigation

Mitigation measures for this alternative would be the same as for the proposed action.

Significance After Mitigation

The impacts to desert pupfish resulting from this alternative will be reduced to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

Impacts to desert pupfish resulting from this alternative would be the same as the proposed action.

Mitigation

Mitigation measures for this alternative would be the same as for the proposed action.

Significance After Mitigation

The impacts to desert pupfish resulting from this alternative will be reduced to below a level of significance.

d. No Project Alternative

Impacts

No significant impacts will occur to desert pupfish as a result of this alternative.

Mitigation

No mitigation measures will be required.

Significance After Mitigation

No significant impacts to desert pupfish will occur with this alternative.

4. Other Wildlife Species of Special Concern

Assumptions and Assessment Guidelines. Impacts to the remaining sensitive wildlife species were determined to be significant or insignificant based upon the sensitivity of the species, the extent of the impact, and the legal requirements governing mitigation of impacts such as the federal and state Endangered Species Acts and the California Fish and Game Code. Habitats supporting these species were considered significant or insignificant in a similar manner.

Impacts to other sensitive wildlife will occur throughout the project site and the basic assumptions include losses of individuals and habitats, especially losses to foraging areas, resting sites, and sites for rearing young. Consideration was given to migratory patterns for many of the bird species.

a. Proposed Action

Impacts

Several sensitive species which occur or potentially could occur at the landfill site or along the railway may be impacted by the proposed landfill activity. A summary of impacts to these species and mitigation measures, if needed, are listed in Table 40. The following discussion is directed towards those species that could be significantly impacted.

The implementation of the project may impact black-tailed gnatcatchers and LeConte's thrasher by the removal of nests, potential nesting sites, and foraging habitat. Approximately 994 acres of habitat on slopes and in ravines, drainages, and washes found both in the mountainous areas and in the flatter portions of the landfill site will be removed by the proposed action. Loss of this habitat is not considered significant, as there is an abundance of such habitat in the Eagle Mountains and in the nearby valley bottoms and bajadas. Approximately 644 acres of this creosote bush scrub habitat, including washes, is set aside on the landfill site as permanent open space (see Figure 89).

A small potential exists for a landfill-caused increase in the regional raven population to impact the Eagle Mountain scrub jay. Ravens may prey upon the eggs and young of scrub jays (Hays, pers. comm. 1991). Impacts to the jay from increased raven depredation would be considered significant.

Significant impacts could occur to the California leaf-nosed bat at the landfill site. The species roosts in the large adit in the area that will be filled in approximately 35 years. Impacts could also occur to this species before the adit is filled in 35 years if the adit is disturbed or closed off. The loss of the water source at the bottom of the East Pit is not considered a significant impact to this species since the Eagle Mountain townsite reservoir will still be available for water.

Implementation of the railroad may affect badgers if their burrows are destroyed during construction maintenance. The location of the one badger burrow found is shown on Figure 57c. No burrowing owls or their burrows were observed during the survey, but appropriate habitat exists throughout the railroad corridor and flat portions of the Eagle Mountain landfill site. Impacts to burrows may occur in the future. Burrowing owls are especially vulnerable to burrow destruction because they use their burrows for both nests and roosting sites. Although burrows of these species may be temporarily impacted by rail line repair and maintenance activity, these species are mobile enough, and alternate appropriate habitat exists in abundance in the immediate vicinity of the rail corridor, that impacts are not expected to be significant. All raptor nests are protected by the Migratory Bird Treaty Act.

Mitigation

Mitigation for impacts to other sensitive wildlife resources will include preservation of habitat on site and dedication of off-site acreage for open space (i.e., desert tortoise habitat, which will also likely support some sensitive bird species). Mitigation measures for other sensitive wildlife species will be incorporated into conditions on the County of Riverside Specific Plan.

On-site Open Space. Approximately 644 acres within the project boundaries will be retained as natural open space. This open space is currently habitat for the black-tailed gnatcatcher and the LeConte's thrasher.

Off-site Open Space. Approximately 375 acres will be preserved off-site to provide compensation for desert tortoise habitat losses within the project area. This area has yet to be selected by the BLM, but is likely to also support some or all of the other wildlife species of concern, in particular the black-tailed gnatcatcher and the LeConte's thrasher.

Bat Roost Monitoring and Adit Extension. The California leaf-nosed bat population at the mine will be monitored during landfill operations. A chimney constructed of large-diameter concrete sewer pipes will be installed over the mine adit to permit the ingress and egress of the bats. This chimney will be extended as the level of refuse increases. This addition will extend above the elevation of the final landfill contour. Because the bats roost deep within the mine tunnel and are active at night, when landfill operations have ceased, they should continue to use the adit, via the chimney extension, after operations begin.

Raven Control Program. The proposed raven monitoring/control program discussed under desert tortoise mitigation would reduce any potential impacts to Eagle Mountain scrub jays from the Eagle Mountain landfill project to a level below significance.

Significance After Mitigation

The impacts to other sensitive wildlife species will be reduced to a level below significance by incorporating the mitigation measures listed above.

b. Reduced Landfill Operations Alternative

Impacts

Impacts to American badger, burrowing owl, and California leaf-nosed bat will be the same as those with the proposed action. The reduced landfill operations alternative will greatly reduce total habitat loss for the black-tailed gnatcatcher and LeConte's thrasher.

Mitigation

Mitigation measures will remain the same as for the proposed action.

Significance After Mitigation

Mitigation measures will reduce impacts to other sensitive wildlife species resulting from this alternative to a level below significance.

c. Proposed Action with Rail Access Only Alternative

Impacts

Impacts to other sensitive wildlife species resulting from this alternative are the same as those under the proposed action.

Mitigation

Mitigation measures will remain as described for the proposed action.

Significance After Mitigation

Impacts to other sensitive wildlife species resulting from this alternative will be below a level of significance.

d. No Action Alternative

Impacts

No significant impacts will occur to any sensitive wildlife species.

Mitigation

No mitigation measures will be required.

Significance After Mitigation

No significant impacts will occur to any sensitive wildlife species under this alternative.

5. Sensitive Plant Species

Assumptions and Assessment Guidelines. Impacts to sensitive plants were determined to be significant or insignificant based upon the sensitivity of the species and the legal requirements governing mitigation of impacts such as the federal and state endangered species acts, and the California Native Plant Protection Act. Major impacts to any federal listed, federal candidate, or state-listed plant species were considered significant, and any major impacts to habitats supporting these species were considered significant. Impacts were considered significant or insignificant for other plant species of concern based upon the sensitivity of the species observed at the project site and the extent of the impact. The evaluation of these impacts included the amount of losses to individuals, their population(s), and their habitat; the level of disturbance to individuals and populations; and any reduction in habitat quality. A summary of impacts to sensitive plants and mitigation measures for the project is listed in Table 40.

a. Proposed Action

Impacts

Two concentrations of Alverson's foxtail cactus occur within the existing Eagle Mountain Mine area. One concentration occurs in the southern portion of the storage area (165 acres) and one concentration occurs within the southwestern perimeter of the proposed landfill footprint (125 acres). The latter of these two (125 acres) would be removed by the project. An additional 33.3 acres of Alverson's foxtail cactus habitat will be impacted by the extension of Eagle Mountain Road and the railroad spur to the landfill site. Impacts to Alverson's foxtail cactus are considered significant.

A portion of the population of California barrel cactus would be impacted by the proposed landfill. However, the large population size (number of individuals) and area covered by this species on the undisturbed slopes surrounding the existing mine will result in a large proportion of the population being preserved in dedicated open space. Impacts to this species are not anticipated to reach a level of significance requiring mitigation, although they would contribute to the cumulative loss of the species.

Major impacts to Orocopia sage within the Eagle Mountain rail line right-of-way are not expected to occur since the rehabilitation and maintenance activities along the rail line will not involve large disturbances. The potential for the loss of a few individuals of this species growing immediately adjacent to the railroad tracks and maintenance road can most likely be avoided. It is anticipated that unavoidable impacts to this species would not reach a level of significance requiring mitigation, especially if potential impacts are minimized by marking the areas containing populations of Orocopia sage in the field and avoidance of the species is implemented.

Other sensitive annual and perennial plant species may occur within the proposed Eagle Mountain landfill site; however, based on current survey results and historical distributional data for these species, large populations of any of these plants are not expected to occur in the existing Eagle Mountain Mine area, within the railway corridor, or within the Eagle Mountain Road corridor. Therefore, no significant impacts are anticipated to these species.

Mitigation

Impacts to Alverson's foxtail cactus and its habitat shall be mitigated by initiating a transplant program that will be conducted on suitable areas within the project boundary. This program shall be funded by the project proponent as a sponsored research program that will provide needed information on the rehabilitation of desert habitat using cactus transplants. The transplant program will involve the following steps:

1) Transplant trials shall be conducted on the following areas within the proposed landfill site to determine which areas are most suitable for the establishment of Alverson's foxtail cactus:

    a) Areas of Eagle Creek south of the mining road in locations where minor disturbance has occurred. This site is a portion of Special Planning Area 6 of the Eagle Mountain Landfill Specific Plan.

    b) Locations in lowlands adjacent to drainages on the southwest portion of Special Planning Area 6 where minor disturbances have occurred.

    c) Locations near the foothills of the Eagle Mountains on the upper bajada area on the northeast portion of Special Planning Area 6.

    d) Locations within Special Planning Area 4 where minor disturbances have occurred.

2) Prior to any transplants being taken from their original habitat, the natural density of the population (number of plants per acre) shall be estimated. Estimates of density can be made by counting the number of Alverson's foxtail cactus observed in quadrats along transects across the population. The resulting density figure will be used in the second stage of the transplant program.

3) The transplant trials shall utilize 10-15 percent of the Alverson's foxtail cactus population to be impacted by the proposed landfill in Eagle Creek to the north of the mining road. A proportion of the salvaged individuals will be transplanted to each trial habitat area.

4) The transplanted Alverson's foxtail cactus used for the initial trials shall be monitored once a month for one growing season (including a summer). After the trial period is complete,

the location(s) having the greatest survivorship will become the site(s) for the completion of the transplant program.

5) Transplanting of Alverson's foxtail cactus, either for the initial planting trials or for the main transplanting effort, shall occur at the most appropriate time of year (late winter/early spring) to take advantage of the rainy season and to increase survivorship of the transplanted material.

6) Sites selected for the main transplant effort shall be planted with the remaining individuals of Alverson's foxtail cactus salvaged from the impact areas of the proposed landfill project at a density similar to that estimated for the natural population (see *2)* above).

7) The final mitigation areas shall be monitored once a month for one growing season (including a summer) to measure survivorship of the cacti and determine the degree of success of the transplant program.

8) A final report summarizing the results of the transplant program shall be prepared by the project proponent and submitted to BLM, CDFG, and USFWS.

Significance After Mitigation

The impacts to sensitive plant species described above will be reduced to a level below significance by the implementation of measures listed above.

b. Reduced Landfill Operations Alternative

Impacts

The major concentrations of Alverson's foxtail cactus will remain impacted by this alternative.

Mitigation

Mitigation measures to reduce impacts to Alverson's foxtail cactus habitat are the same under this alternative as under the proposed action.

Significance After Mitigation

The impacts to Alverson's foxtail cactus will be reduced to a level below significance by the implementation of measures listed above.

c. Proposed Action with Rail Access Only Alternative

Impacts

Some cumulative losses to individuals of Alverson's foxtail cactus will be reduced if improvements and construction will not be needed along Eagle Mountain Road. Impacts at the proposed landfill site and along the railroad spur will remain the same as the proposed action.

Mitigation

Mitigation measures will remain as described above for the proposed action.

Significance After Mitigation

Impacts to Alverson's foxtail cactus will be reduced to a level below significance by the implementation of measures listed under the proposed action.

d. No Action Alternative

Impacts

No significant impacts will occur to any sensitive plant species.

Mitigation

No mitigation measures will be required.

Significance After Mitigation

No significant impacts will occur to any sensitive plant species under this alternative.

6. Major Washes and Drainages

Assumption and Assessment Guidelines. The protection of washes and drainages is under the jurisdictional requirements of the U.S. Army Corps of Engineers (USACE) (Section 404 of the Clean Water Act) and the California Department of Fish and Game (Sections 1600-1603 of the California Fish and Game Code). Each of these agencies requires permits or agreements to be issued before any impacts can occur to these resources or adjacent wetlands. If the total fill deposited into defined "waters of the U.S." or adjacent wetlands from the entire proposed landfill project exceeds one acre, then the USACE must be notified and the project reviewed to determine whether an individual 404 permit is required or the project qualifies under a nationwide permit. All alterations to major drainages require that an agreement be entered into

between the project proponent and CDFG regarding the alteration of the streambed. The resulting Streambed Alteration Agreement will identify compensation measures to ensure minimal impacts to fish and wildlife resources.

a. Proposed Action

Impacts

No significant impacts to adjacent wetlands are anticipated to occur from this project. The only potential impacts to wetlands which may occur during future construction/maintenance activities would be associated with the trestle in the desert pupfish habitat in the tributary to Salt Creek. However, major washes and drainages will be filled within the proposed landfill site, well exceeding the one-acre threshold. Additional fill will be deposited in washes and drainages when improvements to Eagle Mountain Road are completed. The combined fill to "waters of the U.S." by the proposed action may require an individual 404 permit from the USACE. Alterations to these same washes and drainages will require the issuance of a Streambed Alteration Agreement by CDFG.

Mitigation

Based on current maintenance, construction, and operation plans, no disturbance to any of the adjacent wetland habitat would occur; therefore, no specific wetland mitigation is required. If any future construction/maintenance activities do involve any impacts to wetlands (i.e., Salt Creek), they will require supplemental permits or agreements be issued by the USACE and CDFG so that the wetlands are replaced in a manner that would satisfy the "no net loss" of wetlands policy of these agencies. The specific plan for the project shall incorporate this requirement.

Specific compensation measures to offset the filling and alteration of significant washes and drainages by the proposed action will be outlined in the individual 404 permit and Streambed Alteration Agreement which may be required for the project. Minimal compensation shall require that drainage flows continue in the natural washes by minimizing the deposition of fill and providing a means for enhancing drainage (e.g., installation of adequate culverts). Measures shall be taken to minimize the sedimentation of downstream portions of the wash by implementing standard erosion-preventing practices.

Significance After Mitigation

The impacts described above will be reduced to a level below significance by incorporating the mitigation measures listed and by meeting compensation measures identified in specific project permits and agreements.

b. Reduced Landfill Operations Alternative

Impacts

Impacts to wetlands, washes, or drainages resulting from the reduced landfill operations alternative will be similar to the proposed action, though fewer washes would be impacted.

Mitigation

Mitigation measures will remain the same as described above for the proposed action.

Significance After Mitigation

The impacts described above will be reduced to a level below significance by incorporating the mitigation measures listed in the proposed action.

c. Proposed Action with Rail Access Only Alternative

Impacts

Eighteen washes and drainages will no longer be impacted by improvements to and construction of Eagle Mountain Road. Major washes and drainages will still be significantly impacted at the proposed landfill site.

Mitigation

Mitigation measures will remain as described above for the proposed action.

Significance After Mitigation

The impacts described above will be reduced to a level below significance by incorporating the mitigation measures listed for the proposed action.

d. No Action Alternative

Impacts

No significant impacts will occur to any wetland habitat or to any washes and drainages under the No Action alternative.

Mitigation

No mitigation measures will be required.

Significance After Mitigation

No significant impacts will occur to any wetland habitat or to any washes and drainages.

H. Growth Inducement and Socioeconomics

Since the townsite of Eagle Mountain is not included in the landfill project area or its specific plan, growth issues such as traffic and public services and design guidelines will be discussed more fully in the EIR associated with the townsite specific plan area. Additionally, the granting of the Eagle Mountain Road and railroad rights-of-way and the BLM/Kaiser Steel Resources, Inc., land exchange would not directly result in any growth inducement or socioeconomic impacts. Only the landfill operations portion of the proposed action has the potential for growth inducement and socioeconomic impacts. These are discussed below.

1. Growth Inducement

Assumptions and Assessment Guidelines. As discussed in the Utilities and Services section of this draft EIS/EIR, all of the major public services and utilities were developed in the town of Eagle Mountain by Kaiser Steel Resources to support a town of 3,700 persons. Since the mine is now inactive, most of the single-family residences are unoccupied, and the supporting commercial and institutional facilities are no longer in operation. The project would be considered to have a significant growth-inducing effect if the employment it created would induce substantial growth or concentration of population and a need for substantial increases in infrastructure requirements.

a. Proposed Action

Impacts

Local Growth Inducement. At its maximum buildout, the landfill project is expected to provide approximately 163 jobs. A breakdown of the personnel requirements for the landfill and rail operation is shown in Table 41. It is likely that some of the jobs would be filled by people currently living in the area and that previous Kaiser Steel employees may be available to work at the landfill. MRC would give priority to qualified local residents. However, persons from outside the area would also relocate to work at the landfill.

With an average household size of 3.6 persons (SCAG 1980) and assuming each job would represent a household, the 163 jobs would translate to a maximum population increase of approximately 580 persons. The SCAG 1980 census information is considered more representative of an actual maximum population at Eagle Mountain since the 1989 census update by Riverside County reflects an average household size based primarily on the retirement community of Lake Tamarisk. Again, not all of the population would move into the community, since some of the future employees would be people already living in the area. It is also possible that some of the rail workers would live in other desert areas. Additional persons could also be expected to move into the area to renovate/expand the supporting commercial

TABLE 41
PROJECTED STAFFING ASSUMPTIONS
AT MAXIMUM CAPACITY

Staffing	Number at 20,000 TPD	Number at 16,000 TPD
TRANSPORTATION		
Container manager	1	1
Container maintenance	4	4
Maintenance foreman	4	4
Track maintenance	6	6
Operations foreman	2	2
Train engineer	2	2
Train conductor	2	2
Total transportation staff	21	21
LANDFILL		
Manager	1	1
Assistant manager	2	2
Foreman	3	3
Secretary/clerk	4	3
Master mechanic	1	1
Mechanic	7	6
Welder	3	3
Laborers/clean-up crew/general maintenance	7	6
Container loaders	8	7
Grader operators	4	4
Scraper operator	7	6
Transport tractor operator	46	39
Compactor operator	12	11
Dozer operator	13	12
Water wagon operator	3	3
Parts handler	1	1
Truck drivers	5	4
Hydrologist/environmentalist	2	2
Safety engineer	1	1
Surveyor	1	1
Surveyor assistant	2	2
Electrician	2	2
Designer/draftsperson	3	3
Scale operator	4	3
Total landfill staff	142	126
TOTAL STAFF	163	147

facilities for the larger population, primarily at Eagle Mountain. Although not related to the project, the approved expansion of the RTCF would require 65 additional employees, some of which would likely live in the area.

Housing for the future employees is available at Eagle Mountain. Approximately 416 vacant single-family housing units exist at Eagle Mountain, and the units would be rented to MRC employees by Kaiser Steel Resources. The units would need to be renovated prior to occupancy by the employees since the homes have been vacant since 1982. It is possible that some of the employees would locate at Lake Tamarisk, Blythe, or Indio. There are a few existing residences available at Lake Tamarisk, and Kaiser Steel Resources owns an additional 150 lots which could be sold to future employees of the landfill. However, given the immediate proximity of Eagle Mountain to the workplace landfill operation and the schools for the area, it is anticipated that the majority of the landfill workers would live at Eagle Mountain. As noted above, there are no available housing units at Desert Center.

Although the size of the community at Eagle Mountain and to a lesser degree Desert Center and Lake Tamarisk would be much less than that associated with the previous mining operations, the population would be large enough to attract and justify some commercial uses to serve the residents. The increased population, employment, and income resulting from the operation of the proposed facilities would be considered a socioeconomic benefit to the surrounding communities, and the long-term operation of the landfill would lend stability to communities and sustain community services. However, these impacts are not considered significant because the services required by the increased population are generally already available (see Section IV.K. of this draft EIS/EIR) and an increased population of under 1,000 persons to the area is not substantial.

Regional Growth Inducement. Growth is generally attributed to either one of two scenarios: (1) extraregional economic and employment forces rather than the provision of infrastructure or (2) the provision of new infrastructure which may influence the amount, distribution, and nature of development. The proposed project would not provide for substantial regional employment. A brief discussion of potential secondary material industries resulting from development of the proposed action can be found in the Cumulative Projects section of this draft EIS/EIR.

Solid waste will continue to be generated in the southern California region whether this project is approved or not. Growth will be neither discouraged or encouraged in the region by the denial or approval of this project. The approval of the proposed project is therefore not considered a significant regional growth-inducing impact.

Mitigation

Mitigation measures would not be required.

Significance After Mitigation

The growth-inducing effects of the increased population at Eagle Mountain from the proposed action are considered beneficial and not significant. The regional growth-inducing impact is also considered not significant.

b. Reduced Landfill Operations Alternative

Impact

A reduction in the landfill operations would reduce the number of employees needed to operate the landfill by 10 percent (16 employees). Table 41 shows this reduction in employees. Thus, the impacts from the in-migration of persons to Eagle Mountain and the other communities would be similar with those associated with the proposed action.

Mitigation

Since the growth-inducing effects of this alternative are considered not significant, no mitigation is required.

Significance After Mitigation

The growth-inducing impacts of this alternative are considered not significant.

c. Proposed Action with Rail Access Only Alternative

Impact

Since this alternative would likely reduce the number of employees necessary to operate the landfill in the same way the reduced operations alternative would, the impacts would be similar to the reduced operations alternative.

Mitigation

No mitigation is required.

Significance After Mitigation

The growth-inducing impacts of this alternative are considered not significant.

d. No Action Alternative

Impact

The No Action alternative would not attract persons to Eagle Mountain to work at the site. While the number of persons in Eagle Mountain would increase due to the expansion of the RTCF, the long-term reestablishment of the community due to a larger population would not occur.

Mitigation

No mitigation is required.

Significance After Mitigation

No growth-inducing impacts would occur due to this alternative.

2. Socioeconomic Effects

Assumptions and Assessment Guidelines. See the discussion of assumptions and assessment guidelines above.

a. Proposed Action

Impacts

Local Economy. The increased population, employment, and income resulting from both the construction and long-term operation of the proposed landfill facility would be considered an economic benefit to the Desert Center communities. The landfill would increase employment opportunities for the local population and allow for long-term economic stability in the affected communities. The additional population would help sustain and likely increase the existing business income levels (e.g., commercial services at Desert Center and Lake Tamarisk). At Eagle Mountain and to a lesser degree at Lake Tamarisk and Desert Center, the need for new local support commercial/business opportunities would also be created, thereby expanding the range of goods and services available in area. As discussed above, the 163 landfill-related jobs would attract commercial support interests to Eagle Mountain. Although not related to the project, the additional 65 jobs created by the RTCF would be further incentive for commercial reestablishment in Eagle Mountain. Likewise, the increased population could also have a positive influence on real estate and property values in the surrounding area.

A related positive economic impact concerns the medical and pension fund for Kaiser retirees (both salary and hourly employees). There are approximately 7,000 Kaiser Steel retirees, the majority of whom live in the local area, other portions of Riverside County, and San Bernardino

County (Fawcett, Kaiser Steel Resources, 1/15/90). The bankruptcy proceedings for Kaiser Steel resulted in the major creditors being given stock in the newly reorganized company. At the present time, the Volunteer Employee Benefit Association (VEBA), a medical benefit association of retirees, and the pension trust own a majority of the stock in the reorganized company. Direct revenues would be realized by Kaiser from the existing 100-year lease of the land to MRC with rent set at a percentage of the "tipping" fee for wastes disposed of at the site. The proposed landfill project was a major consideration by the creditors and the courts in allowing the reorganization of Kaiser Steel Resources (Fawcett, Kaiser Steel Resources, 1/15/90). The ability of Kaiser Steel Resources to fund these medical and pension funds is also directly related to the value of the stock. As the value of Kaiser stock increases, additional income will be available for redistribution to the stockholders in the form of medical and pension benefits. Thus, to a large degree, the success of the proposed action and increase in stock value dictates the ability of Kaiser Steel Resources to fund the commitments.

Economic benefits would also accrue to the County of Riverside. Additional tax revenue to the County could result from possible property value increases on this project property and in the area and from any new commercial uses. Another revenue source to the County is based on the MOU between MRC and the County which mandates that MRC pay the County based on the solid waste actually disposed of at the landfill. The MOU payment schedule varies between four and six dollars per ton depending on the number of tons deposited in any calendar year. With the landfill operating at full capacity, the revenue to the County would be approximately $30 million per year (1990 dollars). In the first year of operation, the revenue would be close to $3 million dollars. A portion of this money would be allocated to supervisorial districts with an anticipated major portion incurring to the benefit of the 4th Supervisorial District and to the impacted Desert Center area (County Services Area 51) in eastern Riverside County within this district, which includes the Desert Center communities. CSA 51 could anticipate as much as a tenfold increase in its yearly revenues as a result of the proposed action (see Table 13). This would more than offset any expenditures resulting from the project. The MOU also stipulates that MRC pay the County of Riverside $444,000 toward the cost and operation of County Services Area 51 during the project permitting phase provided that certain other requirements established in the MOU are met.

Regional Economy. On a regional level, the primary economic impact on residents would be an increase in the costs associated with solid waste disposal. The current average monthly collection cost to single-family homeowners in the San Gabriel Valley is $9.35. With waste-by-rail the monthly cost could rise to $12.50 to $14.50, or an increase of 33 percent to 55 percent. This estimate assumes that each household generates two tons of refuse per year.

Tipping fees at major landfills in the greater Los Angeles area averaged approximately $10 in 1987 and $18.50 in 1990. These fees are expected to increase over the next five years because of declining landfill capacities. Also, these fees do not include the costs of screening for hazardous materials, removal of recyclables, loading, or transportation to the disposal site.

The anticipated tipping fee at the proposed Eagle Mountain project, which includes such recycling and transportation costs, is approximately $45/ton during the early years of the project. The cost components associated with this tipping fee include operation of the landfill, rail haul at the container handling yard at Eagle Mountain, overhead and profit by MRC, rail transport at the loading stations, and container handling at the unloading stations.

By the time the proposed Eagle Mountain project would begin operation, tipping fees at landfills in the greater Los Angeles area will have increased such that any cost increase associated with the project would not be considered a significant regional economic impact.

Mitigation

The effect of the project on the local economy represents a positive impact; therefore, mitigation is not necessary. Regional economic impacts are not considered significant and would not require mitigation.

Significance After Mitigation

The local economic effects of the project at Eagle Mountain are beneficial and therefore are not considered significant. Because of the anticipated increase of tipping fees throughout the region, the regional economic effects of the project are not considered significant.

b. Reduced Landfill Operations Alternative

Impact

A reduction in the landfill operations would reduce the ultimate capacity of the site by approximately 20 percent. Such a reduction would not affect the economic benefits to the local area associated with the redevelopment of Eagle Mountain. However, the ultimate cash flow to the County of Riverside would be reduced as the total tonnage would not be as great. The actual tonnage reduction could amount up to $4,000,000 a year in County tipping fees. Regionally, a reduction in the landfill operations would not likely alter the costs of the project.

Mitigation

No mitigation is required for the local economy since this alternative represents a positive impact. Regionally, no mitigation is required.

Significance After Mitigation

The local economic effects of the project at Eagle Mountain are beneficial and therefore are not considered significant. The economic effects of this alternative on the region would also not be considered significant.

c. Proposed Action with Rail Access Only Alternative

Impact

Since this alternative would reduce the number of employees necessary to operate the landfill by only 15 percent, the economic impacts on the surrounding communities would be similar to the proposed action. However, this alternative would reduce the daily capacity to 16,000 tons per day. Such a reduction would thereby reduce the maximum annual cash flow to the County by about $4,000,000. On a regional basis, impacts for this alternative would be similar to those of the proposed action.

Mitigation

No mitigation is required.

Significance After Mitigation

The local and regional economic effects of the project at Eagle Mountain are discussed above. They are not considered significant.

d. No Action Alternative

Impact

The No Action alternative would not attract persons to Eagle Mountain to work at the site and would not stimulate the local economy. Economic benefits to the County would also not occur. On the regional level, the No Action alternative would avoid the cost increase in the near future for solid waste disposal which would be associated with the proposed action. Without the proposed landfill, the Southland would have inadequate landfill space for solid waste generated in the region, particularly Los Angeles. This could result in socioeconomic impacts. This scenario would be similar if the reverter clause was implemented and the land was returned to BLM ownership.

Mitigation

Since no project impacts would occur, no mitigation is necessary.

Significance After Mitigation

No impacts would occur to the local economy or the Southland region with the No Action alternative.

I. Geology and Mineral Resources

1. Soil and Geologic Conditions

Assumptions and Assessment Guidelines. For the following environmental analysis, impacts will be considered significant if they prevent the siting of a Class III landfill as defined in the California Code of Regulations, Title 23, Division 3, Chapter 15 (1984). This would include the presence of geologic conditions such as compressible soils and liquefaction which would contribute to the destruction or severe damage to structures during a geologic event and which could endanger the lives of landfill personnel or of other persons in the project area.

a. Proposed Action

Impact

Based on site reconnaissance and review of studies performed by SCS Engineers, dense, clayey soils exist within the fine tailing storage lagoons and also occur in those areas of the project underlain by alluvial material. It is not presently known whether these soils are expansive. If expansive soils are found to be present within those areas proposed for construction of facilities, possible mitigation measures such as selective or remedial grading techniques would be addressed at that time.

Also, based on site reconnaissance and a review of stereo aerial photographs, natural slopes appear to be stable.

Currently, approximately 50 to 70 percent of the benches constructed in the bedrock of the East Pit have failed or are unstable. Several south- and north-facing pit walls and benches have experienced slope instability where debris has collected on downslope benches. In one such area, landsliding has removed approximately three benches, creating a nearly continuous backslope for a vertical distance of approximately 180 feet (SCS Engineers 1990).

Most of the instability appears to be related to wedge failures in highly fractured bedrock. In some areas, it appears that blasting practices and ore removal procedures have contributed to the instability of the pit or the disappearance of entire benches for up to distances of 200 feet.

Additionally, some surficial instability is present on the west-facing cut slopes excavated in the alluvial area of the East Pit. In this area, slope instability appears to be erosional and related to concentrated surface water drainage. Although no rotational or translational type failures were noted, several gullies and washouts currently exist.

The landfill of refuse is planned for portions of the waste rock dumps to the northeast of the East Pit area. Materials placed in these waste rock dumps were end-dumped and loose-graded into their current location. Compaction efforts in these areas are unknown at present. Additionally, the top three to five feet of the alluvial material in the eastern project area are porous and appear to be relatively loose. Without mitigation, the potential for settlement in the waste rock dumps and the alluvium is considered to be moderate to high. There may be potential for settlement that could affect the clay liner placed between these materials and the landfill refuse (SCS Engineers 1990).

Presently, collapse potential or hydroconsolidation in the vicinity of the project area is unknown. However, site reconnaissance and literature review indicate that subsurface conditions and soils subject to collapse potential or hydroconsolidation do not appear to be present within the project area.

Site reconnaissance indicates that large boulders (up to about 10 feet in diameter) are present in waste dump material within the northern portion of the project area. Handling and burial of this material may require special treatment if development is anticipated to include the material for refuse cover. Currently, the project does not propose to use such large material.

The issuance of rights-of-way over Eagle Mountain Road, its extension, and the Eagle Mountain rail line would not have geological impacts. The land exchange, made up of selected and offered lands, would not have any geological impacts.

Mitigation

Mitigation measures for on-site unfavorable soil conditions include:

1) Expansive Soils—Identify expansive soils in alluvial material within the landfill footprint. Regrade, as necessary.

2) Slope Stability—Determine safe slope angles and maintain slopes within this range. Identify need to flatten slopes or construct fill buttresses. Place liner against safe slope angles. Keep loose rock cleaned off benches on north- and south-facing cut slopes in areas immediately above areas of active landfilling.

3) Preparation of Ground for Landfilling—To reduce adverse impacts associated with settlement of alluvial materials in the East Pit area, excavate and/or recompact unsuitable soils prior to liner construction.

Significance After Mitigation

Potentially expansive soils and slope instability could create significantly adverse conditions in the project site. The impacts would be reduced to levels below significance by the mitigation measures listed above.

b. Reduced Landfill Operations Alternative

Impact

This alternative would result in the same type of geological impacts discussed above for the proposed action.

Mitigation

The same mitigation measures indicated for the proposed action would be necessary.

Significance After Mitigation

Significant geological impacts would be reduced to insignificance by the recommended mitigation measures.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would result in the same type of impacts identified above for the proposed action.

Mitigation

The same mitigation measures identified for the proposed action would apply.

Significance After Mitigation

Significant geological impacts would be mitigated to levels of insignificance by the recommended mitigation measures.

d. No Action Alternative

Impact

If development does not occur, no on-site structures will be subject to impacts related to geology, soils, or seismicity.

Mitigation

No mitigation measures will be necessary.

Significance After Mitigation

There would be no potentially significant impacts to on-site structures.

2. Seismic Hazards

Assumptions and Assessment Guidelines. For the following environmental analysis, impacts will be considered significant if they prevent the siting of a Class III landfill as defined in CCR, Title 23, Division 3, Chapter 15 (1984). This would include the presence of an active fault on-site (so that one or more project components could be destroyed or severely damaged as a direct consequence of a geologic event) and the presence of other geologic conditions which would directly or indirectly endanger the lives of landfill personnel or of other persons in the project area (for example, if chemicals were to be released into the environment in case of a geologic event). In addition, Chapter 15 regulations require that Class III landfills be designed to withstand the maximum probable earthquake without damage to the foundation or to structures which control leachate surface drainage, erosion, or gas.

a. Proposed Action

Impact

Although a number of generally northwest-trending faults have been reported to extend through the project area, none of the faults noted in the literature or mapped by Kaiser Steel personnel are known to be active. Recent site mapping has delineated the surface trace of a fault zone crossing the central portion of the East Pit with a northwesterly trend (see Figure 63). This fault cuts through bedrock in the pit but is overlain by Quaternary alluvium in the south wall of the pit. This relationship indicates that the latest fault movement predated deposition of the alluvium and suggests that this fault is pre-Quaternary in age and thus not active or potentially active. Based on the data in this section, it appears that the potential for surface faulting at the proposed project site is low.

Several active fault zones are within 62 miles of the project area. The maximum characteristic (equivalent to maximum probable) earthquake magnitudes for these faults are shown on Table 42 (Wesnousky 1986). These magnitudes range from 6.2 to 7.5. Severe ground shaking could occur at the site during a seismic event of this magnitude. Wesnousky indicates a peak horizontal ground acceleration of 0.1 *g* in the area of the proposed project.

Secondary seismic hazards, such as those associated with severe ground shaking during an earthquake, include ground rupture, liquefaction, seiches or tsunamis, flooding (dam or levee failure), landsliding, rockfalls, and seismically induced settlement.

Alluvial soils, typically the subject of liquefaction studies, are present within the general Eagle Mountain area. Since the depth of groundwater is approximately 340 feet below grade, liquefaction potential is considered to be low at the site of the proposed reclamation project.

No large bodies of water or water storage facilities exist upgradient of the site. The potential for flooding due to dam or levee failure is considered to be nonexistent.

Most of the northern project area contains gently to moderately sloping terrain, and the central project area contains a pit where a series of benches with corresponding steep backslopes have been constructed for mining purposes. The hillside areas north of the East Pit are underlain by hard bedrock with little or no soil cover and do not appear to be landslide-prone. However, some relatively shallow slumping on the surface could occur with ground shaking where water is concentrated within these hillside areas.

Loose, fractured rocks and boulders are present within the benches and backslopes of the East Pit and in the waste rock dumps. Approximately 50 to 70 percent of the northerly and southerly facing pit wall backslopes within the East Pit area contain loose rock material up to four feet in diameter. A strong seismic event could trigger some slope failures within the existing pit walls and would present a high rockfall risk where loose materials become dislodged from the benches.

Mitigation

The effects of seismic shaking can be satisfactorily mitigated through compliance or conformance with appropriate Riverside County ordinances (Uniform Building Code). Other mitigation measures for specific on-site hazards include:

1) Secondary Seismic Hazards—Progressively scale loose rock and materials on benches immediately above the working face of the landfill.

2) Handling of Oversized Rock—Scale the benches above the working face of landfill. Construct berms to intercept fallen rock.

TABLE 42
ACTIVE FAULT ZONES NEAR PROJECT AREA

Fault Name	Distance from Site (miles)	Maximum Characteristic Earthquake (M)
Blue Cut	21	6.8
Pinto Mountain	25	7.3
Bullion Mountain	26	6.2
San Andreas	34	7.5
Mesquite Lake	35	7.0
Ludlow	44	6.2
Banning	45	6.4
Emerson	55	6.4
Hidalgo	56	6.8
San Jacinto (Casaloma-Clark branch)	57	7.1
Calico	60	7.0
San Jacinto (Coyote Creek branch)	62	6.6

Significance After Mitigation

Seismic ground shaking could trigger slope failures and rockfalls within the existing pit walls and where loose materials become dislodged from the benches. These impacts, however, can be mitigated to insignificance by the mitigation measures listed above.

b. Reduced Landfill Operations Alternative

Impact

This alternative would result in the same seismic hazard impacts discussed above in relation to the proposed action.

Mitigation

The same mitigation measures indicated for the proposed action would apply.

Significance After Mitigation

Potentially significant seismic hazard impacts would be reduced to levels of insignificance by the recommended mitigation measures.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would result in the same seismic hazard impacts discussed above for the proposed action alternative.

Mitigation

The same mitigation measures identified for the proposed action would apply.

Significance After Mitigation

Significant seismic hazard impacts would be reduced to levels of insignificance by the recommended mitigation measures.

d. No Action Alternative

Impact

If development does not occur, no on-site structures will be impacted by geologic events occurring in the area.

Mitigation

No mitigation measures will be necessary.

Significance After Mitigation

There would be no potentially significant impacts to on-site structures.

3. Mineral Resources

Assumptions and Assessment Guidelines. This section assesses the availability of the mineral resources at the Eagle Mountain Mine and the impacts associated with covering those resources by the landfill or by transferring public lands to private ownership and vice versa. By comparing the potential loss of mineral reserves with total domestic reserves a level of significance can be assigned. Any unmitigated loss of mineral reserves is a significant impact to mineral resources.

a. Proposed Action

Impacts

Sequence I (0 to 10 years) of landfill operations would conform to the East Pit - Midsection mineral resource area. Landfill development in this area would thus prevent the open pit mining of 4.8 million metric tons (or 2.8 percent) of the remaining mineral reserves at the Eagle Mountain Mine.

Sequence II (11 to 75 years) of landfill operations would take place in the East Pit - West Extension ore resource area, which contains approximately 6.8 million metric tons (or 4.0 percent) of the remaining mineral reserves. This resource area, however, has a high stripping ratio of almost five tons of overburden per ton of ore and is thus considered by Kaiser to be an underground mineral reserve (i.e., not an open pit ore reserve). Sequence II of landfilling operations would seriously impact such underground mining economically, but not completely preclude it. Landfill operations conducted in subsequent sequences (i.e., Sequence III and the Final Sequence) would have similar impacts on underground mining potential.

The undeveloped portion of the Central Pit resource area, located east of the current Central Pit limits, would be impacted by landfilling operations late in Sequence III (76 to 85 years). This encroachment would prevent the mining of approximately 20.4 million metric tons (or 12 percent) of the remaining open pit reserves at the mine. The remaining 44.6 million metric tons (or 25.9 percent) of the reserves are outside of the project area and thus would not be affected by the landfill project.

The Final Sequence (86 to 115 years) of landfill operations would impact the extreme eastern portion of the East Pit deposits (East Pit - Alluvial). These deposits contain approximately 21 million metric tons (or 12.6 percent) of the remaining open pit reserves, primarily as an iron ore placer deposit.

Approximately 72.7 million metric tons (or 42.6 percent) of iron reserves in the Black Eagle - North and South resource areas would be unaffected by the landfill project.

No precious metals were detected in the proposed landfill project area or areas accessed by the Eagle Mountain rail line.

As discussed above, landfill operations would result in the following adverse impacts on recoverable mineral resources contained in the East Pit - Midsection, Central Pit, and East Pit - Alluvial ore resource areas:

Loss of access to 4.8 million metric tons of iron ore located in the East Pit - Midsection (or 2.8 percent of the remaining reserves at the Eagle Mountain Mine) if these reserves are mined prior to commencement of the landfilling operations.

Loss of access to an additional 41.4 million metric tons of iron reserves located in the East Pit - Alluvial and Central Pit deposits (or 24.3 percent of the remaining open pit ore reserves at Eagle Mountain) if these ore reserves are not mined prior to the commencement of landfilling operations in each of these areas.

Loss of most reasonable and economic access to 6.8 million metric tons of underground mineable resources in the East Pit - West Extension (or 4.0 percent of the mining reserves at Eagle Mountain) if these reserves are not mined to commencement of landfilling operations in this area.

The proposed action does not include any active mineral exploration or mining activities at Eagle Mountain.

Iron is one of the most plentiful elements in the world, constituting about five percent of the world's crust by weight (Labys 1980). Although there are many types of iron-bearing materials, the two most widely distributed are hematite and magnetite. According to the United

States Bureau of Mines (1991), 1990 world iron resources are estimated to exceed 800 billion metric tons of crude ore containing more than 230 billion metric tons of iron. The largest concentrations of the world's iron ore reserves are in the Soviet Union, Australia, Canada, United States, Brazil, and China (U.S. Bureau of Mines 1991). Many countries in the world produce iron ore with high iron content (i.e., more than 50 percent), which constitutes a direct-shipping ore. U.S. iron resources are estimated to be about 110 billion metric tons of ore containing approximately 27 billion metric tons of iron (U.S. Bureau of Mines 1991). Of these resources, only 16.1 billion metric tons of reserves (containing 3.8 billion metric tons of iron) are considered to be economically recoverable (U.S. Bureau of Mines 1991). Virtually all U.S. iron produced requires concentrations and pelletization (U.S. Bureau of Mines 1991).

The landfill operations at the Eagle Mountain Mine would result in the following losses in terms of economically recoverable U.S. iron reserves, if the specified reserves are not mined prior to commencement of landfilling operations:

East Pit - Midsection Resources: Loss of 4.8 million metric tons or 0.03 percent of economically recoverable U.S. iron reserves.

East Pit - Alluvial and Central Pit Resources: Loss of 41.4 million metric tons or 0.26 percent of economically recoverable U.S. iron reserves.

East Pit - West Extension: Loss of most reasonable and economic access to 6.8 million tons or 0.04 percent of U.S. iron reserves.

Landfill development could result in beneficial impacts to open pit mining at Eagle Mountain. Mining at Eagle Mountain is dependent on the availability of rail service over Kaiser's 52-mile rail line. With suspension of mining activities, use of this rail line was discontinued in 1986. Landfill development would result in reactivation of this rail line, which could also be available for transport of iron ore concentrates or rock products. If, in the future, Kaiser Steel Resources, Inc., wishes to recover iron reserves or rock products at the Eagle Mountain Mine, they would apply for an amended rail right-of-way to allow mining uses. Any such future mining would require environmental review and land use permits.

Landfill development would share many of the costs that a small mining operation would otherwise bear alone, such as capital and operation and maintenance costs for the railroad, haul roads, electrical and water distribution systems, and maintenance and warehousing facilities.

Any future mining activities would, in turn, benefit landfill development. Namely, overburden and plant tailings would be available to the landfill as cover material. In addition, mining excavations within the perimeter of the landfill would increase the available capacity of the landfill.

Mitigation

The impacts of landfilling on mineral resources could be satisfactorily mitigated by the sequencing of landfilling operations, which would assure that the most potentially minable iron resources are impacted last. Such sequencing would provide sufficient time (i.e., 75 years) to recover the ore contained in the Central Pit and East Pit - Alluvial ore reserves of Eagle Mountain if economically justified. However, if these areas are not mined before their respective impacting phases of landfilling operations commence, access to these resources would be lost.

Loss of access to the ore reserves contained in the East Pit - Midsection and West Extension is not considered a significant impact.

Significance After Mitigation

Significant mineral resources impacts would be reduced to levels below significance by the project sequencing.

b. Reduced Landfill Operations Alternative

Impacts

This alternative may potentially result in adverse impacts on the East Pit - Midsection and Central Pit iron ore resource areas. The potential impacts are as follows:

> Loss of access to 4.8 million metric tons of iron ore reserves contained in the East Pit - Midsection (or 2.8 percent of the remaining open pit ore reserves at Eagle Mountain), if the Central Pit ore resource area is not mined prior to commencement of landfill operations.
>
> Loss of access to an additional 20.4 million metric tons of iron reserves contained in the Central Pit area (or 12 percent of the remaining open pit reserves at Eagle Mountain), if this area is not mined prior to commencement of landfilling operations in this area.
>
> Loss of most reasonable and economic access to 6.8 million metric tons (or 4.0 percent) of underground mineable resources in the East Pit - West Extension if this area is not mined prior to commencement of landfilling operations in this area.

This alternative would result in the same beneficial impacts discussed above for the proposed action. This alternative would not impact the East Pit - Alluvial section, which contains 21 million metric tons of iron ore reserves.

Mitigation

The same mitigation measures discussed for the proposed action would apply.

Significance After Mitigation

Significant mineral resources impacts would be reduced to levels below significance by the project sequencing.

c. Proposed Action with Rail Access Only Alternative

Impacts

This alternative would result in the same mineral resources impacts as for the proposed action.

Mitigation

The same mitigation measures discussed for the proposed action would apply to this alternative.

Significance After Mitigation

Significant impacts to mineral resources would be mitigated to levels below significance by the project phasing.

d. No Action Alternative

Impacts

If development of the landfill does not occur, no on-site mineral resources would be impacted.

Mitigation

No mitigation would be required.

Significance After Mitigation

No significant impacts were identified.

J. Visual, Recreation, and Wilderness Resources

The landfill construction and operations, the BLM/Kaiser Steel Resources, Inc., land exchange, the Eagle Mountain rail line and Eagle Mountain Road Extension right-of-way grants, and Riverside County Plan Amendment will have no significant impacts on visual, recreation, and wilderness resources. The following discussion provides a detailed evaluation of the effect of the proposed action on visual contrast, views, windblown debris and dust, night lighting, recreation, and wilderness.

1. Visual Contrast

Assumptions and Assessment Guidelines. The visual assessment of the study area has utilized the BLM's Visual Resource Management System (BLM n.d.). Landscape character types were defined and scenic quality evaluated in the context of the regional landscape character. KOPs and corridors were established and the visual sensitivity of the project area was determined based on the views from these points. A visual contrast rating was completed for the existing and proposed conditions of the project area. An increase in visual contrast is considered to be a negative impact while a decrease in visual contrast is considered a positive impact.

a. Proposed Action

Impact

The impact of the proposed landfill operations on visual contrast will be discussed here in terms of the BLM's visual contrast rating method and the visual management objectives for VRM Classes III and IV as determined for this project.

Within the Class IV area, the visual contrast of existing disturbed conditions with the adjacent undisturbed areas is strong and currently does not meet the VRM Class IV objectives because the past mining and associated activities do not repeat the form, line, color, and texture of the surrounding landscape. The completed landfill will be noticeable from some KOPs and will begin to attract attention and dominate the characteristic landscape, but the landform will repeat the basic elements inherent in the characteristic landscape, thus meeting the Class IV objectives.

Within the Class III area, the management objectives are and will be met: there will be little or no visual contrast created. This area will remain undisturbed/ungraded until the final phases of landfill construction, and even then, only minimal grading (if any) will occur in this area.

The following features are included in the project design which would reduce the visual contrast level and meet the Class IV visual management objectives. The result of the design features on visual contrast effects is considered a positive impact.

Location. The project is located in an area that is not highly visible from most KOPs. Background distances and topographic features which block views of the area contribute to this.

Design. The shape and mass of the landfill area, although not exactly recreating the original topographic conditions, will blend in with the adjacent landforms more than the existing graded areas do. The linear bands created by the slope-and-terrace grading will eventually be covered and no longer visible. The form will be a series of three connected and gently rounded mounds that increase in elevation from east to west as does the adjacent north ridgeline of the Eagle Mountains. The color and tone contrast of the final cover will be minimized by using the coarse tailing for cover blending with the adjacent soil colors. The final color tone will blend in with the adjacent tones to compensate for the variations in shade and shadow. The texture will not be as coarse as adjacent undisturbed areas.

Minimizing Disturbance. The grading and landfill limits shall be clearly staked or fenced to minimize disturbance to areas not required for landfill operations. Construction access will be controlled. Where possible, container handling and other ancillary activities will take place in existing use areas so that grading of undisturbed vegetated areas will be avoided or minimized.

Revegetation. Revegetation of the areas disturbed by landfill is expected to occur naturally since the final cover will be similar to the native surface. This natural process will be enhanced by including a layer of prepared soil mix in the top layer of the landfill surface cover which is capable of supporting vegetative growth. A seed mix of native plants will be incorporated into the surface cover to expedite the natural revegetation process.

The railroad and Eagle Mountain Road right-of-way grants will have no impact on visual contrast levels. The construction of the new railroad spur and the northern extension of Eagle Mountain Road would create a slight visual contrast with adjacent areas, but the impact would not be significant.

The land exchange, consisting of offered and selected lands, would result in disturbed areas of high visual contrast being exchanged for non-disturbed desert areas of low visual contrast, which is considered a positive impact.

Mitigation

No significant visual contrast impacts are identified for the proposed action. The project design includes such features as facilities location and design, minimization of ground disturbance, and revegetation of disturbed areas. Implementation of these features will result in a positive effect of visual contrast.

Significance After Mitigation

No significant visual contrast impacts were identified with the proposed action. A positive visual effect will result from implementation of the design features listed above.

b. Reduced Landfill Operations Alternative

Impact

This alternative would result in a reduction in the daily inflow of waste and a reduction in the size of the landfill footprint. An incremental reduction in visual contrast would occur with this alternative and incremental improvements over the proposed action would result. This is considered a positive effect.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant adverse impacts were identified with this alternative. A positive effect would result due to the visual contrast improvements provided by project design features.

c. Proposed Action with Rail Access Only Alternative

Impact

The issue of limiting access does not change the evaluation of visual contrast. Impacts from this alternative would be the same as the proposed action, resulting in a positive effect.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant adverse impact is identified with this alternative. A positive visual contrast effect would result due to incorporation of the project design features.

d. No Action Alternative

Impact

The No Action alternative will maintain current strong levels of visual contrast which exceed the objectives of Class IV.

Mitigation

No mitigation is identified.

Significance After Mitigation

Visual impacts with this alternative do not meet Class IV objectives and are considered negative and significant.

2. Views from Desert Center and Other KOPs

Assumptions and Assessment Guidelines. The visual assessment of the study area has utilized the BLM's Visual Resource Management System (BLM n.d.). Landscape character types were defined and scenic quality evaluated in the context of the regional landscape character. KOPs and corridors were established and the visual sensitivity of the project area was determined based on the views from these points. A visual contrast rating was completed for the existing and proposed conditions of the project area. An increase in visual contrast, as observed from Desert Center and other KOPs, is considered to be a negative impact, while a decrease in visual contrast is considered a positive impact.

a. Proposed Action

Impact

As described under the existing conditions section, the distant views of the project area from Desert Center, Lake Tamarisk, and Interstate 10 are significantly obstructed by the steep hills in the middle ground. For this reason, the visual impact of the landfill on these areas is low. Figures 90 through 95 show cross sections through the landfill and a location map. During the first several decades of operation, the landfill operations will be below grade and not visible. Eventually, the upper elevation of landfill area as it nears completion will be slightly visible as a rounded ridgeline against the background of the north ridge of the Eagle Mountains. The project area views from State Highway 177 are so far in the distance that the visibility is very low and future visibility of the completed landfill will be low. It will be difficult to distinguish between the landfill and the surrounding Eagle Mountains.

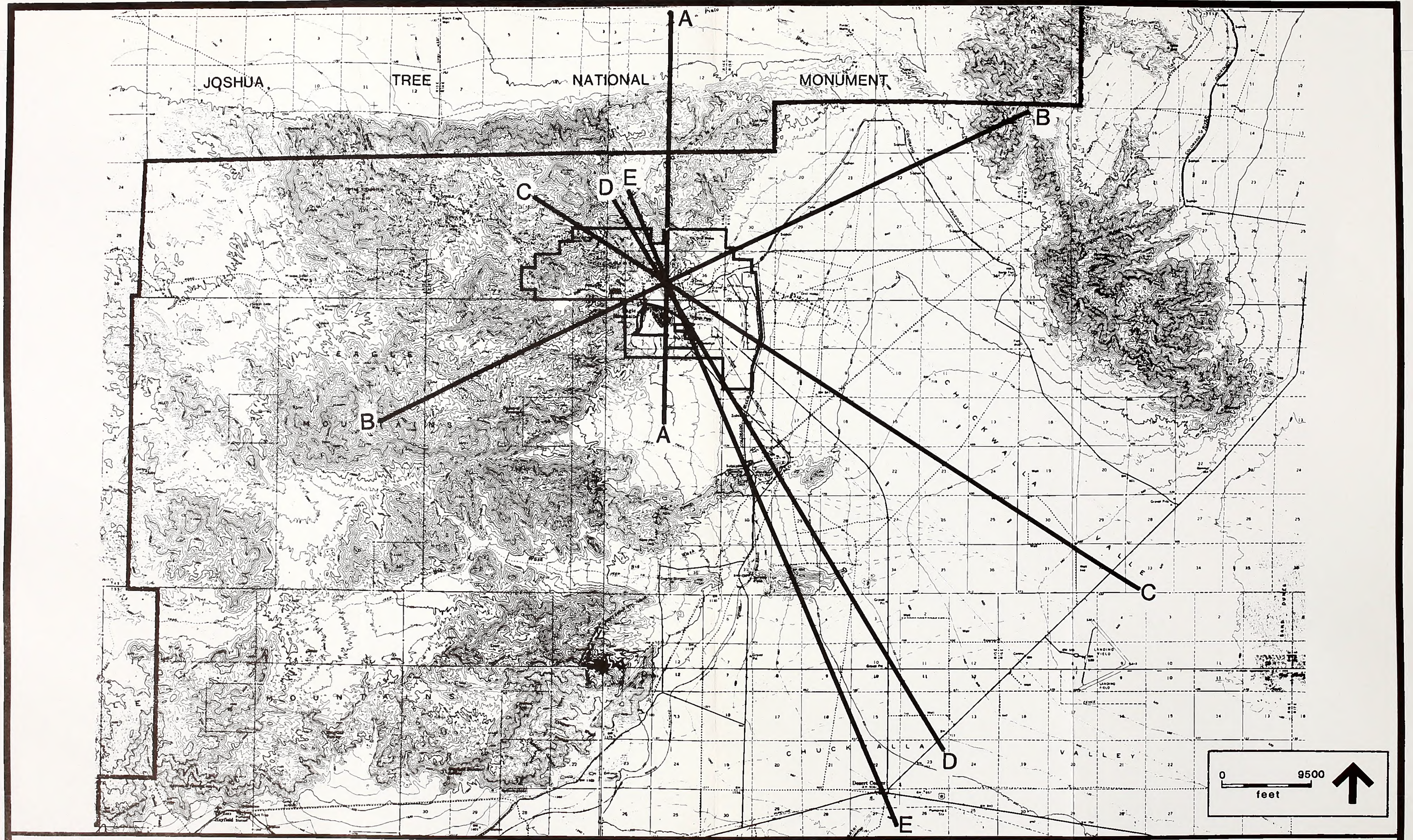


FIGURE 90. CROSS SECTION LOCATIONS

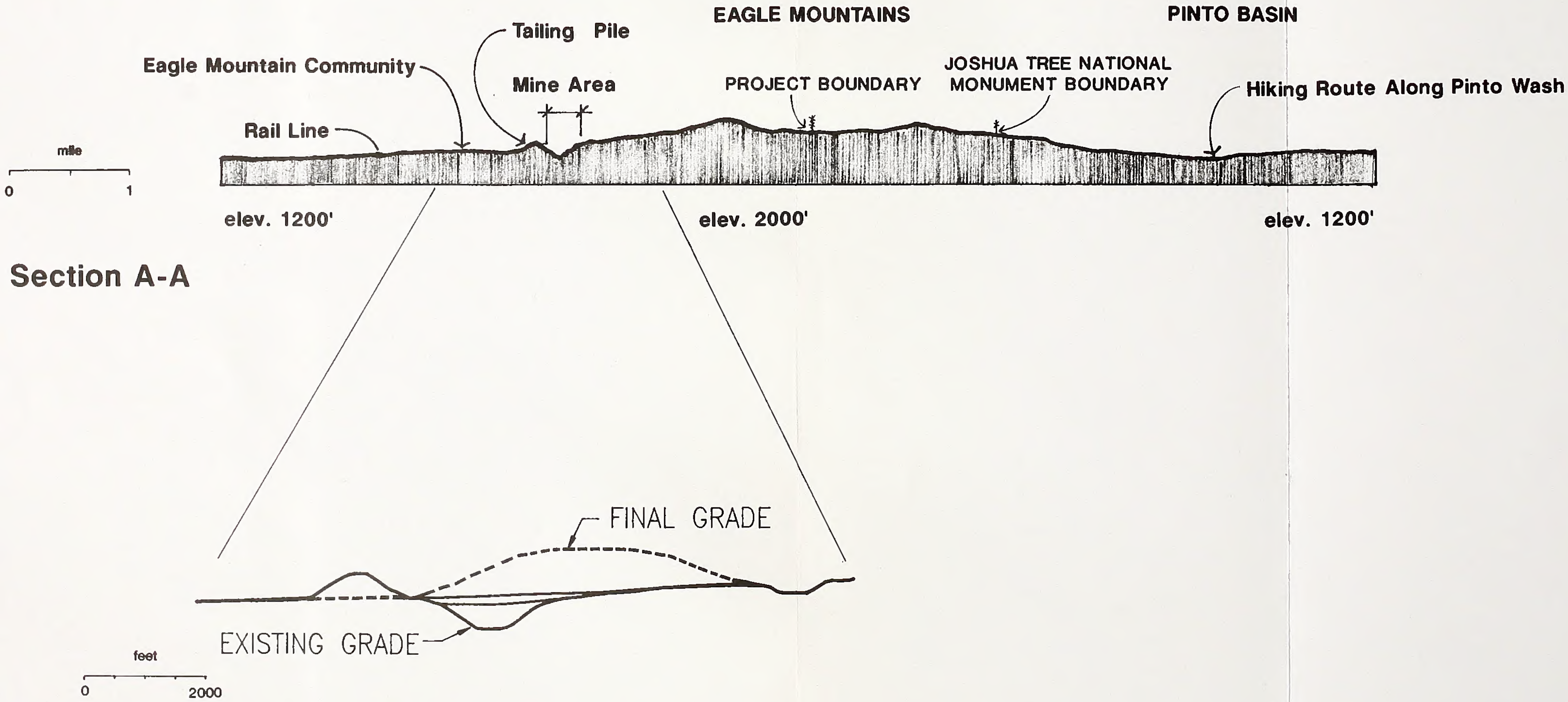


FIGURE 91. CROSS SECTION A-A

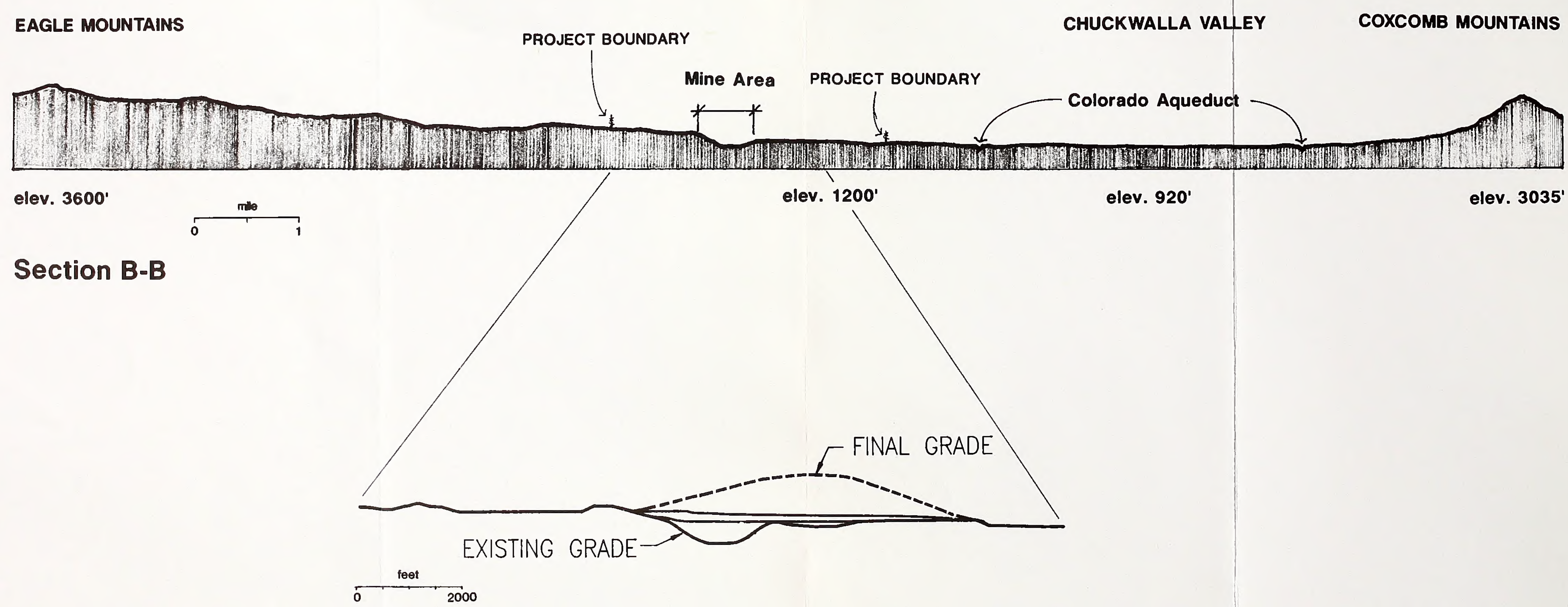


FIGURE 92. CROSS SECTION B-B

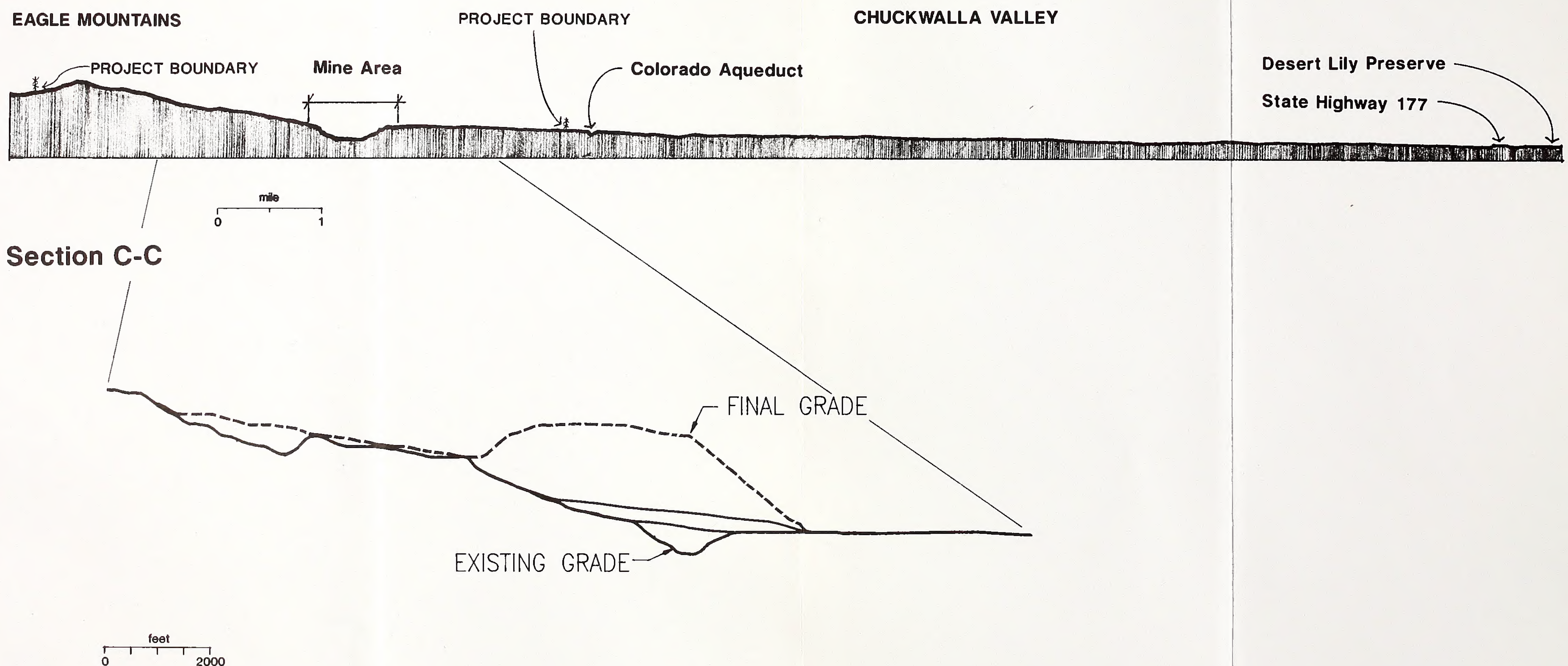


FIGURE 93. CROSS SECTION C-C

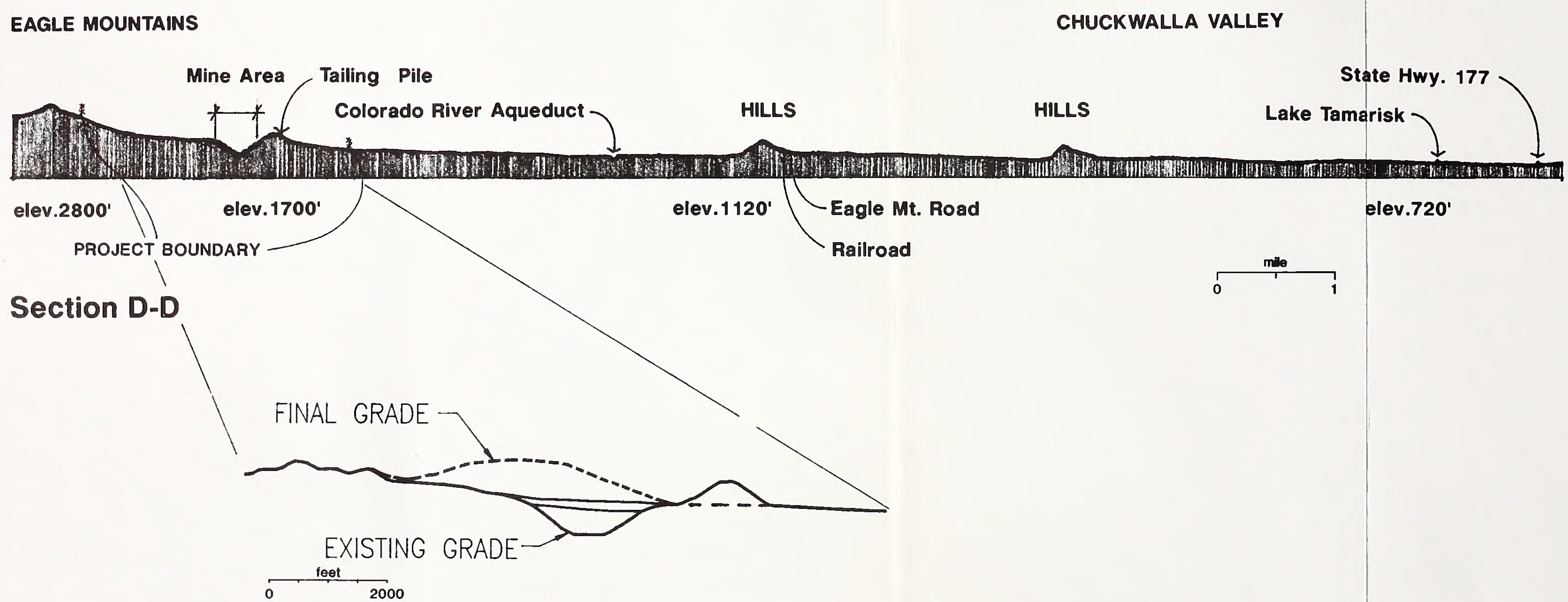


FIGURE 94. CROSS SECTION D-D

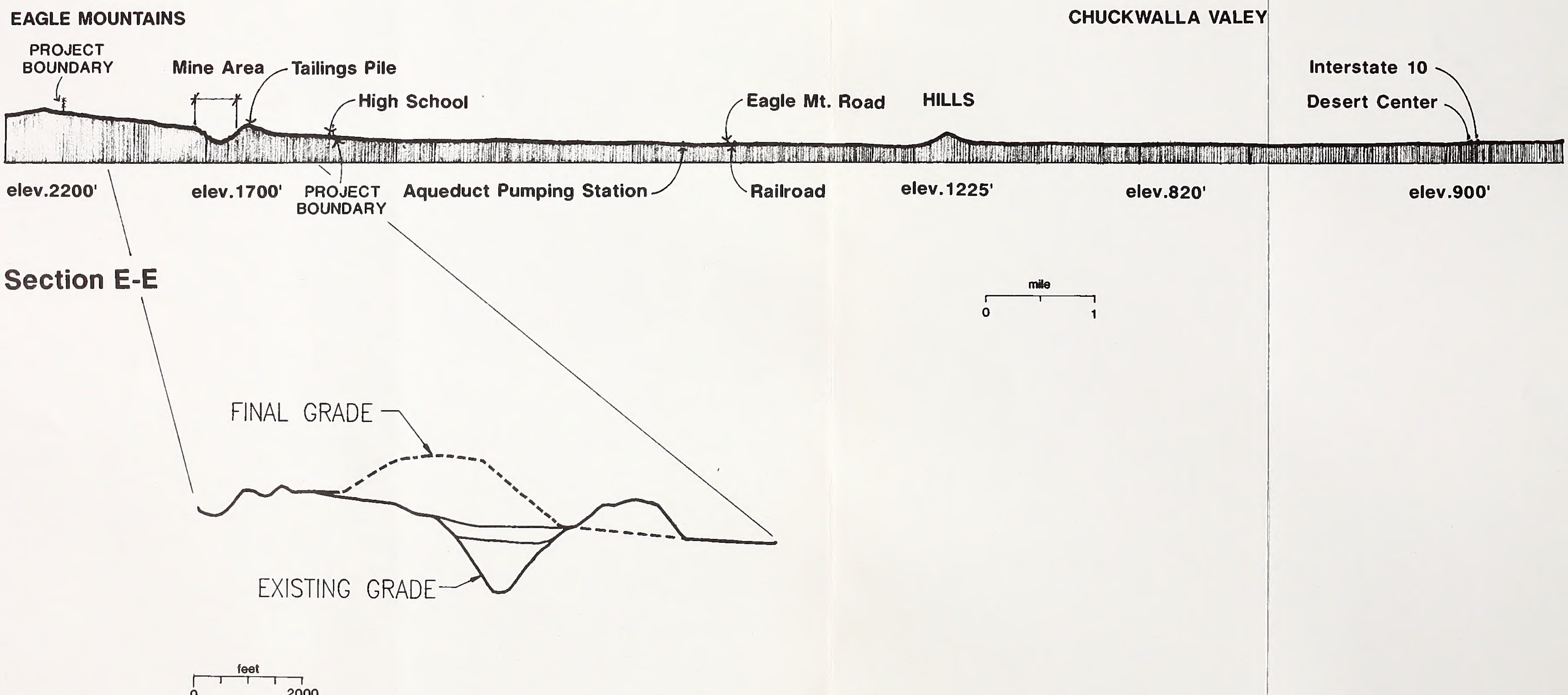


FIGURE 95. CROSS SECTION E-E

The implementation of several features included in the project design would reduce visual impacts to below a level of significance. These are as follows:

Visual Contrast Reduction. The level of visual contrast will be reduced by the mitigation measures described previously under visual contrast (location, design, minimizing disturbed areas, and revegetation).

Project Phasing. The initial phases of the project will be filling the western portions of the proposed landfill area. Landfill operations will be screened by the intervening natural topography, existing vegetation, and distances. Final phases and the completed landfill may be seen, but the landforms created will provide an approximation of the original topographic conditions.

Truck Traffic Routing. Truck traffic to the container yard will use I-10 and Eagle Mountain Road rather than going through Desert Center on Kaiser Road past Lake Tamarisk and other residences.

The impact of the proposed landfill operations on the views from these distant viewing points will be an improvement on visual quality. Upper-elevation slopes in the project area that can now be seen as the lighter scars will be covered and/or screened from view by the landfill. The final form and configuration of the landfill will blend in more with the adjacent landforms than the existing conditions and will be less visible as a result. Visual contrast will be reduced and a positive visual impact will result.

The railroad and Eagle Mountain Road right-of-way grants will have no impact on views from Desert Center or other KOPs. The new railroad spur and the northern extension of Eagle Mountain Road would have an insignificant impact, if any, on views from those points. The reactivation of the train and the additional truck traffic will create a slight visual contrast, but the impact would be insignificant.

The land exchange, including the exchange of private and public lands, will have no impact on views from KOPs.

Mitigation

The project design includes measures such as project phasing, routing of truck traffic, and implementation of the design features mentioned above to improve visual contrasts. These measures will minimize visual effects. No additional mitigation is required with the proposed action.

Significance After Mitigation

No significant visual impact was identified with the proposed action.

b. Reduced Landfill Operations Alternative

Impact

The effect of reducing the size of the landfill footprint and the inflow of waste would be to decrease the visual contrast in views from Desert Center and other KOPs. The final form and configuration of the landfill will blend in more with the adjacent landforms than the existing conditions and will be less visible as a result. The overall visual effect would be an incremental improvement to the proposed action which is considered a positive visual impact.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

No significant visual impact was identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

The decrease in truck traffic would not be noticeable since that traffic is routed to Eagle Mountain Road rather than Kaiser Road. Impacts from this alternative would be incrementally improved over the proposed action, resulting in a positive effect.

Mitigation

Mitigation would be the same as for the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative.

d. No Action Alternative

Impact

Current visibility of upper slopes would be maintained, with the resulting low visual impact.

Mitigation

No mitigation would be required with this alternative.

Significance After Mitigation

No significant impacts are associated with this alternative.

3. Views from Eagle Mountain Townsite

Assumptions and Assessment Guidelines. The visual assessment of the study area has utilized the BLM's Visual Resource Management System (BLM n.d.). Landscape character types were defined and scenic quality evaluated in the context of the regional landscape character. KOPs and corridors were established and the visual sensitivity of the project area was determined based on the views from these points. A visual contrast rating was completed for the existing conditions of the project area. An increase in visual contrast, as observed from the Eagle Mountain townsite, is considered to be a negative impact, while a decrease in visual contrast is considered a positive impact.

a. Proposed Action

Impact

It is anticipated that the landfill operation will have a positive impact on the community of Eagle Mountain. There will be an increase in activity levels and population and a renewed interest in improving the visual quality of the area. The actual landfill operations will not be visible for many years, as they will be screened from view by the existing tailing pile and the berms containing the tailing ponds. The tailing pile will decrease in height over time as it is used for cover material. At project completion, the tailing pile will be gone, and the landfill itself will rise 900 to 1,500 feet above the elevation of the community. Although large in scale, the landfill is smaller in mass and scale than the surrounding Eagle Mountains, which establish the visual context. The proposed action will have a significant impact on the views from the community of Eagle Mountain. However, that impact will be dissipated over time with landfill operations not even seen for several decades. Visual contrast will be decreased over time, resulting in a net positive impact.

Several features are incorporated into the project design which would reduce potential impacts to a level below significance. The net result will be an increase in visual quality within the community and a moderate impact on views due to the landfill. This is not considered to be a significant impact. These design features are as follows:

Project Phasing. During the first several decades of operation, landfill activities will take place below grade within the western portions of the proposed landfill area and will not be seen by the community.

Location. The base of the landfill will be at least one-half mile away from the closest homes, reducing the impact on area residents.

Incremental Revegetation. Revegetation will proceed as completed landfill areas reach final grade and receive final cover. This phased approach will be used so that when the landfill is complete, revegetation will already be established for much of the surface area.

Improved Visual Quality Within the Community: Clean-Up and Tree-Planting Programs. Since the mine ceased active operations, the priorities for the area have appropriately been security and safety—not aesthetics. A large section of the residential area has been fenced, trees have died or are dying, and building demolition debris remains in scattered piles. The overall impression is one of neglect and abandonment. The initiation of landfill activities will bring with it an influx of residents growing in number as the operations reach their maximum potential. Existing homes will be repaired and upgraded as necessary to provide an adequate amount of housing for landfill employees choosing to live here.

Aerial photographs from 1981 indicate a large number of canopy trees lining the streets and planted around homes. Since then, many of these trees have died. As the population at Eagle Mountain is reestablished, it is expected that tree planting would again occur. An active tree planting program is one of the most significant measures that can be taken to improve the visual quality of the community. The scale of the landfill is such that it will always have a dominant visual presence, but a large number of trees along streets and around homes would create a more human scale and a sense of enclosure and would shift the focus away from the landfill. The tree canopies will partially screen and break up views of the landfill, decreasing its visual dominance. The shade created will reduce residential energy costs and make the community more habitable. Trees selected will be low-water-using trees indigenous to the area, such as ironwood and palo verde, as well as desert-adapted trees. Irrigation with nonpotable water will be provided during the initial establishment period.

The railroad and the Eagle Mountain Road right-of-way grants and the exchange of public and private lands will have no impact on views from the Eagle Mountain townsite. The new railroad spur and the northern extension of Eagle Mountain Road will have an insignificant impact on views from the townsite because truck traffic and the new railroad spur will not be routed through the townsite.

Mitigation

The project design includes features such as project phasing, distance of landfill from Eagle Mountain, revegetation, and implementation of community clean-up programs. These measures will improve existing visual effects from the Eagle Mountain townsite. No additional mitigation is required with this alternative.

Significance After Mitigation

No significant impacts were identified. A positive visual effect would result from implementation of the project design features.

b. Reduced Landfill Operations Alternative

Impact

The reduction in size and scale of the landfill operations would serve to reduce incrementally the visual impact as compared to the proposed action. The ridgeline of the Eagle Mountains would be seen above the silhouette of the landfill, providing a visual backdrop and making the landfill appear smaller in scale. The distance from the residential areas would remain the same as in the proposed action. The net result after implementation of the project design features listed above will be an increase in visual quality within the community and a moderate impact on views due to the landfill. This is not considered to be a significant impact.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative. A positive visual effect would occur upon implementation of the project design features.

c. Proposed Action with Rail Access Only Alternative

Impact

A reduction in truck traffic to the landfill site will not affect views from the Eagle Mountain community. The net result of this alternative after implementation of the project design features will be an increase in visual quality within the community and a moderate impact on views due to the landfill. This alternative represents an incremental improvement over the proposed action and is not considered to be a significant impact.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative. A positive visual effect would occur upon implementation of the project design features.

d. No Action Alternative

Impact

Currently, the views from the community are significantly impacted by the imposing tailing pile, the exposed slopes, and scarred areas. This high level of impact would remain. Furthermore, the visual quality of the community itself would remain low.

Mitigation

No mitigation is identified.

Significance After Mitigation

A significant impact is associated with this alternative.

4. Windblown Debris and Dust

Assumptions and Assessment Guidelines. The landfill will operate under a "No Visible Dust" policy, as described in the Air Quality section of this document. An increase in the amount of windblown debris and/or dust, attributed to project-related activities, is considered a significant impact.

a. Proposed Action

Impact

The potential impact of windblown debris, including dust and litter, from landfill operations, is a significant concern shared by Joshua Tree National Monument and BLM staff as well as by residents of the area. The landfill could be a source of litter and dust and the unpaved roadbeds and other exposed areas could be a source of dust. From the Pinto Basin area and hiking route, any dust rising above the north ridgeline of the Eagle Mountains would be highly visible and would detract from the wilderness characteristics of the area. The sparse vegetative

cover would not provide visual screening, and in fact, the native plants could trap litter in the branches or spines, increasing the visibility and negative visual impact.

Seasonal storm patterns for this area pose a particular concern. The summer rainstorms frequent in July and August are characterized by a buildup of clouds and strong isolated winds. The storms are intense and the prevailing directional winds from the south and southeast could scatter litter well into the Eagle Mountains, the Pinto Basin area, and beyond. The pickup and retrieval of the debris in wilderness areas would have to be done on foot since no vehicular access is allowed.

Private property owners share similar concerns. Windblown litter is not only a visual blight, but a nuisance to retrieve. Rising dust clouds in the project area would be visible from residential areas. The design features listed below would ensure that the impacts due to windblown debris would be below a level of significance.

Project Phasing. During the first two decades of operation, landfill activities will take place below grade within the East Pit, reducing potential for escaped litter. Fencing and regular patrolling of the perimeter areas are measures that will be taken during subsequent phases.

Material Handling. Incoming refuse materials will be brought to the site in closed containers or vehicles, then transported to the working face of the landfill by truck. Only then will the containers be opened and materials deposited. Once deposited, the refuse will be compacted then covered on a daily basis with a six-inch-minimum layer of coarse tailing. The waste inspection facility will be fenced to prevent windblown debris. This limited and controlled handling and exposure of the refuse will minimize opportunities for windblown debris.

Cover Materials. The existing on-site coarse tailing will be utilized for the daily cover. This material was screened during processing, leaving a coarse tailing product material that will produce substantially less dust when applied as a cover material than native soils in the area.

Dust Control. Regular watering or paving of the haul roads within the project area will be included as a dust control measure. Similar measures will be taken during the construction of the new railroad spur and the northern extension of Eagle Mountain Road.

Operations Policy. The landfill will operate under a "No Visible Dust" policy, as described in the Air Quality section of this document.

Storm Watch/Early Warning Procedure. Landfill operators will implement an active storm watch and early warning procedure by which deposited uncovered materials can be quickly covered prior to imminent windstorms reaching the site. This would include visual observations as well as communication and coordination with adjacent public land management agencies that have weather information systems.

Accident Response. Landfill operators will develop a plan to ensure timely and complete cleanup of accidental spills. There will be sufficient vehicles, equipment, and personnel available to respond to accidents resulting in the spilling of refuse.

Communication and Follow-up. There will be operations personnel assigned to litter control that can be contacted directly when JTNM or BLM staff observe or receive reports of problems developing with windblown debris. This will include a follow-up by landfill operators to ensure the timely retrieval of stray litter.

The railroad and the Eagle Mountain Road right-of-way grants and the land exchange will have no impact on windblown debris and dust. The construction of both the new railroad spur and the paved northern extension of Eagle Mountain Road will be conducted with standard dust control measures such as spraying disturbed areas with water. Traffic along the railroad spur and the paved roadway is not expected to increase dust levels, and all transported landfill materials will be transported in containers to prevent windblown debris.

Mitigation

Implementation of the above project design features will greatly reduce the potential impact from windblown debris. Exposure of refuse will be minimal, and there will be ongoing dust control efforts. In the event of an accidental spill, sufficient equipment and personnel will be sent to the spill site to complete a timely cleanup. No additional mitigation would be required with the proposed action.

Significance After Mitigation

No significant visual impact is identified due to windblown debris and dust with the proposed action.

b. Reduced Landfill Operations Alternative

Impact

The effect of the reduced landfill alternative on the potential impact of windblown debris will be the same as the proposed action. Implementation of the project design features listed above will greatly reduce the potential impact from windblown debris. Exposure of refuse will be minimal and there will be ongoing dust control efforts. In the event of an accidental spill, sufficient equipment and personnel will be sent to the spill site to complete a timely cleanup. Impacts to windblown debris and dust are insignificant.

Mitigation

Mitigation for this alternative is identical with the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would result in a reduction of truck traffic and the associated potential for spill from a vehicular accident. Exposure of refuse will be minimal, and there will be ongoing dust control efforts. Implementation of the above-mentioned project design features will reduce greatly the potential impact from windblown debris. Minimal wind debris and dust impacts would occur and impacts are considered insignificant.

Mitigation

Mitigation is identical with the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative.

d. No Action Alternative

Impact

The current low level of impact will be maintained under this No Action alternative. At this time, the exposed slopes are somewhat stabilized in that dust has not been identified as a problem.

Mitigation

No mitigation is required.

Significance After Mitigation

No significant impacts are associated with this alternative.

5. Night Lighting

Assumptions and Assessment Guidelines. Visually prominent night lighting does not currently exist on the project site or along existing rights-of-way. Night lighting and illumination of the sky within the project site resulting from full floodlighting of facilities, the road right-of-way, and railroad corridor would be considered a significant impact.

a. Proposed Action

Impact

The potential for visually impacting the surrounding area by night lighting of landfill operations is potentially significant. Starry night skies are an asset enjoyed by area residents and by wilderness recreation area users. In the past, nighttime lighting of the mining activities was noticeable as a glow in the sky area above the mine and higher-elevation lights were visible from as far as 70 miles to the north (Heuston, JTNM, 11/89). The higher-elevation lighted areas were also highly visible from Interstate 10, Desert Center, and other area residences. Night lighting is made more conspicuous in the absence of other lighted areas, except the small amount of lighting at Desert Center and Lake Tamarisk.

The lighting of ground-level activities at the container handling yard and other lighting within the area is not anticipated to be visible from Pinto Basin. Points within the Coxcomb Mountains and the Eagle Mountains will be moderately impacted by the increased lighting partly because of the angle of view from these higher-elevation viewpoints. Visitor use of these areas is very low though, particularly at night.

The project lighting will have little or no impact on Desert Center and Lake Tamarisk because their views of ground-level activities to be lighted are screened by the steep hills in the foreground/middle ground. Lighting from truck traffic will not increase in these areas.

Implementation of the following project design features will reduce potential night lighting impacts to below a level of significance.

Limitation on Night Activities. Landfilling will be limited to daytime hours. The container handling yard activities may run around the clock; thus, nighttime activities will be limited to the operation of the container handling yard. This limitation on night activities is the most significant measure that can be taken to reduce visual impact.

Type of Lighting. Lighting that is required for safety and security will be directed and locational rather than flooding large areas with light. Fixtures will have horizontal cutoff type shields to direct the light downward and prevent the scattering of light upwards. Poles will be

selected at the minimum height necessary to light the immediate area. New fixtures installed shall utilize low-pressure sodium lights.

Truck Traffic Routing. Truck traffic to the container handling yard would use Interstate 10 and the existing Eagle Mountain Road approximately two miles west of Desert Center. This will eliminate additional lighting from truck headlights along Kaiser Road, which is adjacent to most residences in the area.

The railroad and the Eagle Mountain Road right-of-way grants and the land exchange will have no impact on night lighting. Train traffic along the rail will have an insignificant impact associated with the train lights for the twice-nightly transport of landfill material. There will be no regularly scheduled truck traffic at night, and therefore, no night lighting impact is associated with the northern extension of Eagle Mountain Road. Neither the railroad corridor nor the road corridor itself will be lighted.

Mitigation

The project design features listed above, such as limiting nighttime activities, directing and shielding lighting, using low-pressure sodium lights, and appropriately routing truck traffic will minimize lighting impacts. No additional measures would be necessary.

Significance After Mitigation

No significant impact is identified with the proposed action.

b. Reduced Landfill Operations Alternative

Impact

This alternative would have the same effect as the proposed action.

Mitigation

Mitigation is identical with the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would have a slightly lower impact than the proposed action due to the reduction of truck headlight lighting along Eagle Mountain Road. Night-lighting impacts from this alternative are considered not significant.

Mitigation

Mitigation is identical with the proposed action.

Significance After Mitigation

No significant impact is identified with this alternative.

d. No Action Alternative

Impact

The No Action alternative would maintain current low-level impacts resulting from existing security lighting and lighting of homes.

Mitigation

No mitigation is required.

Significance After Mitigation

The impact is not considered to be significant.

6. Recreation

Assumptions and Assessment Guidelines. The current recreation values of the project area are low, due to the extensive open pit mine operation associated with the Eagle Mountain iron ore mine. Neither the existing or proposed railroad or Eagle Mountain Road rights-of-way or the land exchange properties have been identified as having recreational value. The evaluation of the proposed action's impact on recreation was based on the assumption that a net loss of existing recreation opportunities, a displacement of recreation uses, or a degradation of recreational value would constitute a significant impact.

a. Proposed Action

Impact

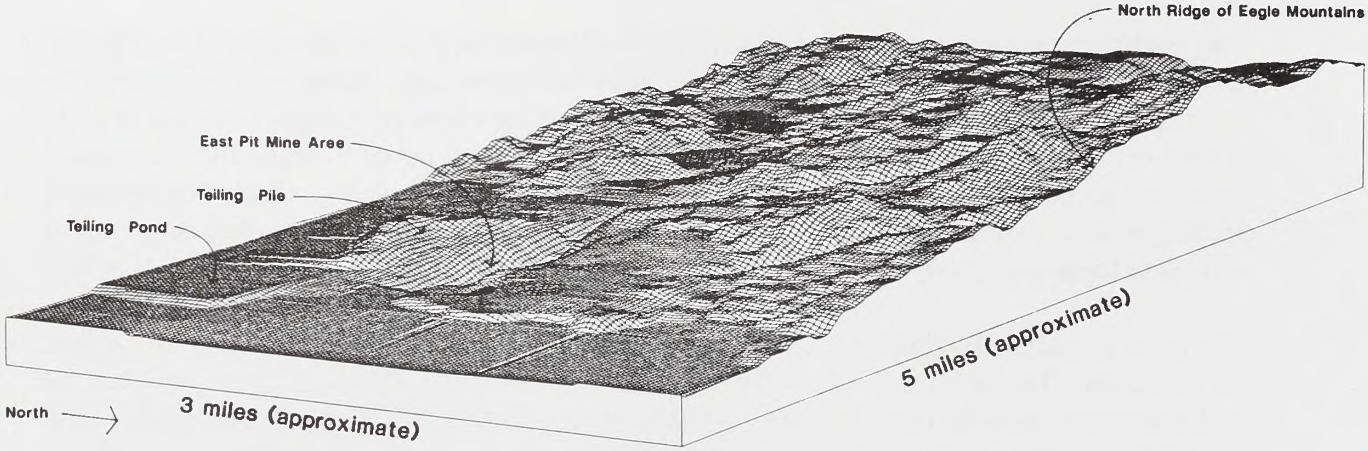
The landfill construction and operations, as allowed by the land exchange, right-of-way grant, and plan amendment, will have indirect impacts on recreation. These will be limited to insignificant visual impacts of the landfill operation on the views from certain vantage points within off-site recreational use areas. No direct impacts will occur to recreation resources: there are no designated recreation areas within the project boundaries, there will not be a reduction in size or surface of off-site recreation areas, nor will there be immediate physical effects to these resources.

The railroad and the Eagle Mountain Road right-of-way grants will have no significant impact on recreation. The land exchange will result in an increase in BLM lands that are undisturbed and a decrease in BLM lands that are significantly degraded. This is a positive impact. The new railroad spur and the northern extension of Eagle Mountain Road will have no impact on recreation.

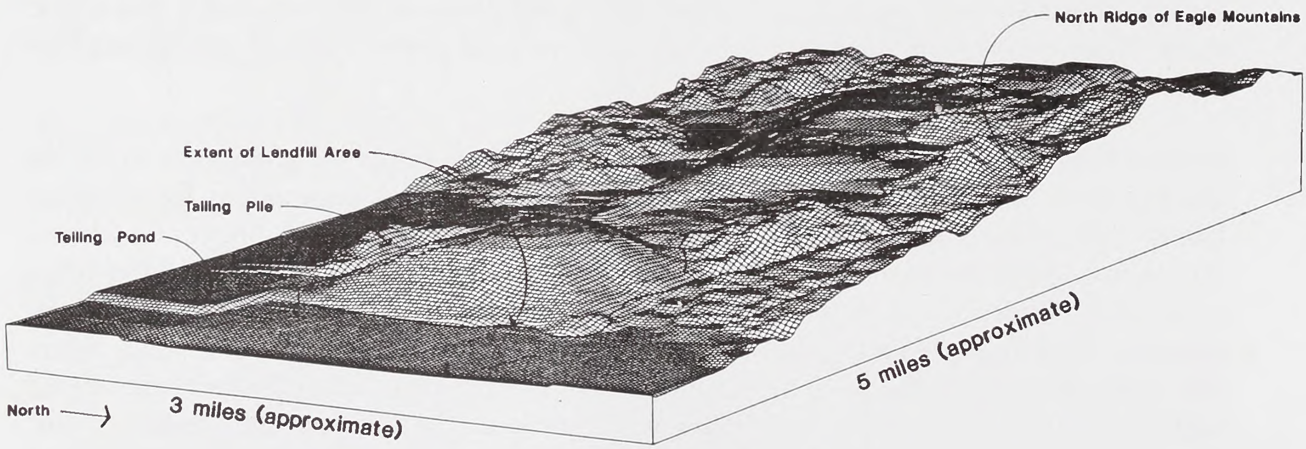
California Desert Conservation Area. Although all four multiple use classes occur in the project vicinity, the lands immediately adjacent to the project area are designated as Class I (Intensive), the highest and best use of which is determined to be "to provide for concentrated use of lands and resources to meet human needs." The project area itself is private land and is therefore not classified by the BLM. The adjacent areas will continue to support very low to moderate user densities and recreation values will remain at the same existing levels for hiking, backpacking, hunting, camping, four-wheel driving for pleasure, wilderness use, and nature study. Sight-seeing from some locations will continue to be impacted by off-site views of the project area, but at less than current levels.

Joshua Tree National Monument. The project area is not within the boundaries of JTNM and will have no direct impact on its recreation values, uses, or opportunities for camping, hiking, backpacking, photography, wilderness use, or nature study. The project area is not visible from Pinto Basin or from roads within JTNM (see Figure 91). As the landfill nears completion (Figure 96), a portion of the landfill would exceed the elevation of the northern ridgeline of the Eagle Mountains and would be visible from the eastern portion of Pinto Basin and could detract from the wilderness characteristics of the area. From points further to the north in the Pinto Mountains, binoculars are required to pick out the radio tower on this ridgeline, so although activities higher than the ridgeline could possibly be seen, they would not be detectable to most JTNM visitors at this distance.

The proposed action will not result in a loss of existing recreation opportunities, displacement of recreation uses, or a degradation of recreation values. Therefore, no direct impacts are associated with this alternative. The indirect visual impact to off-site recreation areas would



EXISTING CONDITIONS



PROJECT COMPLETION

FIGURE 96 VIEW FROM THE NORTHEAST (COXCOMB MOUNTAINS), EXISTING AND PROJECT COMPLETION CONDITIONS

RECON

be insignificant. The features included as part of the project design would eliminate or minimize project views from Pinto Basin, eliminate or significantly reduce project views from the Coxcomb Mountains, and lessen the impact on views from the Eagle Mountains.

Mitigation

No mitigation is required.

Significance After Mitigation

No significant impact is identified with the proposed action.

b. Reduced Landfill Operations Alternative

Impact

This reduced scale of operations alternative would have a lesser impact than the proposed action. The resulting decrease in height of the landfill would render it virtually undetected from most adjacent recreational use areas. No direct impacts are associated with this alternative. Indirect visual impact to recreation areas would be insignificant.

Mitigation

No mitigation is required.

Significance After Mitigation

No significant impact is identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

A reduction in truck traffic to the site would have effects similar to the proposed action. No direct impacts are associated with this alternative and indirect visual impact to recreation areas would be insignificant.

Mitigation

No mitigation is required.

Significance After Mitigation

No significant impact is identified with this alternative.

d. No Action Alternative

Impact

This alternative would result in a continuation of insignificant impacts on recreation.

Mitigation

No mitigation is required.

Significance After Mitigation

The current level of impact is not considered significant.

7. Wilderness

Assumptions and Assessment Guidelines. The evaluation of the project's impact on WSAs is based on the assumption that lands currently under review for wilderness are required by federal mandate to be managed in a manner that does not impair their suitability for wilderness designation. Therefore, impairment or degradation of a Wilderness Study Area's size; naturalness; outstanding opportunities for solitude or a primitive and unconfined type of recreation; or ecological, geological, or other features of scientific, educational, scenic, or historic value would constitute a significant impact.

a. Proposed Action

Impact

The landfill construction and operations, as allowed by the land exchange, rail and road right-of-way grants, and plan amendment will have no direct impact on wilderness resources: there are no designated WSAs within the project boundaries, there will not be a reduction in off-site wilderness areas, nor will there be any immediate physical effects to these off-site areas.

There will be no reduction in size, naturalness, outstanding opportunities for solitude or for primitive and unconfined recreation, or ecological, geological, or other features of scientific, educational, or historic value of WSAs. There will be no surface disturbance or visible impact on WSAs themselves. The landfill will not degrade or impair the wilderness values of adjacent

WSAs to constrain the Secretary of Interior's recommendation with respect to the areas' suitability or nonsuitability for preservation as wilderness.

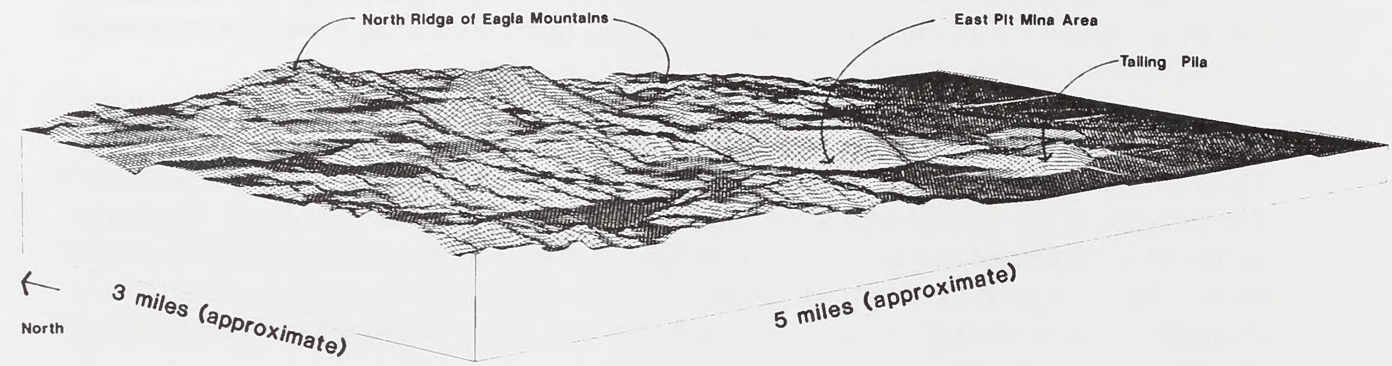
Indirect impacts will be limited to those resulting from increased activity levels visible from WSAs and any associated noise, night lighting, or windblown debris. Noise, night lighting, and windblown debris have been discussed in previous sections. Upon completion, the landfill will have a lesser visual impact on wilderness values than the existing conditions because of the reduction of visual contrast.

Three factors related to the landfill design further lessen impacts to wilderness scenic values. These are the location of the area, the design of the landfill, and the visual contrast reduction. The location of the landfill area at the base of and tucked back into the Eagle Mountains decreases or eliminates its visibility from the Coxcomb and Chuckwalla mountains and Pinto Basin. The design of the form and shape of the landfill would decrease its visibility and dominance. Other mitigation methods described under Visual would reduce the impacts on the wilderness scenic values.

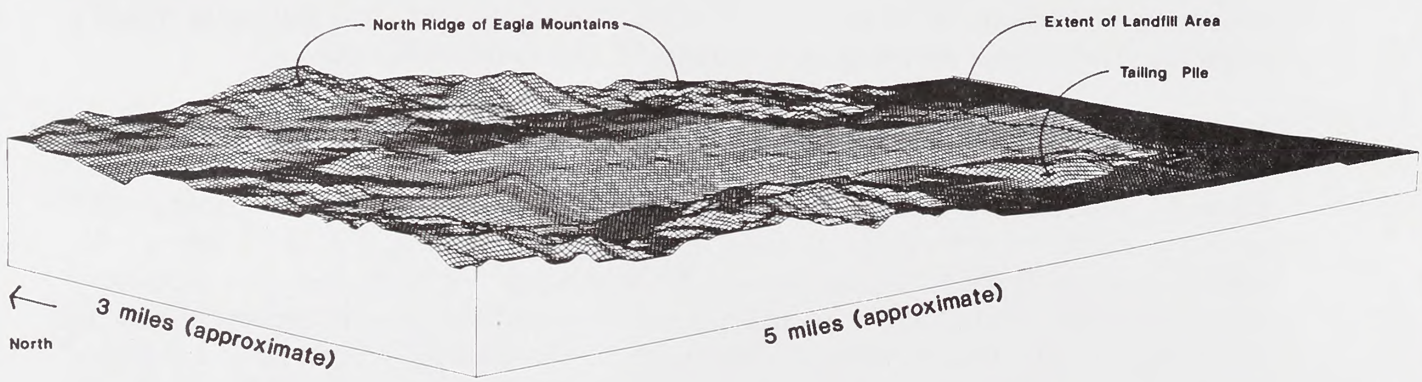
The following discussions on the four WSAs in the project vicinity describe in detail how the off-site views from these areas would be affected by the proposed action.

Coxcomb Mountains WSA (CDCA-328). Landfill operations will be visible in the background from points in these mountains, but from eight miles distance, they will be subordinate to other elements within the viewshed. Once completed, the landfill will be difficult to distinguish from the surrounding Eagle Mountains. Figure 96 illustrates the appearance of the project site as it appears now and how it will appear upon the project completion from the Coxcombs. Areas in the central and northern portions of the Coxcombs which are most frequently used for recreation do not have views of the project area and will not be visually impacted. The distance precludes other impacts on other wilderness values.

Eagle Mountains WSA (CDCA-334). The project area will continue to be highly visible from many areas within the Eagle Mountains but not from the most commonly visited areas. Figure 97 illustrates the appearance of the project site as it is now and as it will appear upon project completion from a ridgeline point in the Eagle Mountains. Figure 92 shows cross sections from the Eagle Mountains through the project site. Figure 90 shows the location of the cross section. Short-term visual impacts will be greater than current impacts because of the increase in activities and traffic that would be visible in the foreground zone. Long-term visual impacts will be less significant after implementing the visual contrast mitigation measures. The solitude of interior canyons, diversity of terrain, and relationship to Joshua Tree National Monument will continue to offer outstanding opportunities for primitive and unconfined types of wilderness recreation.



EXISTING CONDITIONS



PROJECT COMPLETION

FIGURE 97. VIEW FROM THE SOUTHEAST (EAGLE MOUNTAIN), EXISTING AND PROJECT COMPLETION CONDITIONS

RECON

Pinto Basin WSA (CDCA-334A). The project area is not visible from Pinto Basin (see Figure 91). As the landfill nears completion (see Figure 96), a portion of the landfill would exceed the elevation of the ridgelines of the Eagle Mountains and would be visible from the eastern portion of Pinto Basin and could detract somewhat from the scenic characteristics of the area. Other opportunities such as camping, backpacking, nature study, and wilderness experience will not be impacted.

Chuckwalla Mountains WSA (CDCA-348). The views of the project area from these mountains is obscured by distance and topography. Impacts to wilderness resources will be insignificant.

Project features discussed above under views from KOPs would eliminate or minimize project views from Pinto Basin as well; eliminate or significantly reduce project views from the Coxcomb Mountains; and lessen the impact of views from the Eagle Mountains. These indirect visual impacts on wilderness resources are not considered significant. The significance of impact after implementation of the design features will not impair the suitability of adjacent WSAs for preservation as wilderness. No other impacts to wilderness values are associated with this alternative.

Mitigation

Project design features such as the reduction of visual contrast, project phasing, and truck traffic routing would significantly reduce impacts to wilderness resources. No additional mitigation is required.

Significance After Mitigation

No significant impact is identified with the proposed action.

b. Reduced Landfill Operations Alternative

Impact

This alternative would have a lesser impact than the proposed action. There would be only an incremental reduction of impact on views from the Coxcomb Mountains because, from a distance of eight miles, the decrease in height would not be significantly noticeable. The views from the Eagle Mountains would be affected slightly more by this alternative because the reduction in size would be more apparent to closer viewers. The resulting decrease in height would render the landfill virtually undetected from most of Pinto Basin.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant wilderness resources impact is identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would only affect the Eagle Mountain areas that have foreground views of the railroad and Eagle Mountain Road. The truck traffic would decrease, but there would not be a significant reduction of impact on the wilderness recreation areas.

Mitigation

Mitigation is the same as for the proposed action.

Significance After Mitigation

No significant wilderness resources impact is identified with this alternative.

d. No Action Alternative

Impact

The No Action alternative would result in a continuation of the current visual impacts on the Eagle Mountains (low to high impact), Coxcomb Mountains (medium-low impact), and Joshua Tree National Monument (low impact). Off-site views from the wilderness areas to the open pit mine would not change.

Mitigation

No mitigation is identified.

Significance After Mitigation

The current level of impact is not considered significant.

K. Utilities and Services

1. Water and Sewer

Assumptions and Assessment Guidelines. Impacts to water and sewer would be considered significant if existing facilities could not serve adequately the needs of the proposed landfill operations.

a. Proposed Action

Impact

The total water consumption due to the proposed landfill activities, including dust control, would amount to approximately 1,972 acre-feet per year as discussed in the Water Quality and Use section of this draft EIS/EIR. Existing wells in the Chuckwalla Valley will provide this water. Using the total groundwater reserve estimate of 6 million acre-feet based on U.S. Geological Survey calculations of basin water resources discussed in the Water Quality and Use section, there appears to be recoverable water reserves in the project area for a period of approximately 500 years. The project's effect on the future groundwater supply is not considered a significant impact. The cumulative impact of this water consumption on the regional water basin is discussed in the Water Quality and Use and Cumulative sections of this draft EIS/EIR.

Indirect impacts on water consumption would occur due to the increased population at the Eagle Mountain townsite. As noted in the project description, the landfill project is expected to create approximately 163 jobs. With an average household size of 3.6 persons (SCAG 1980) and assuming each job would represent a household, the 163 jobs would translate to a maximum population increase of approximately 587 persons. The SCAG (1980) census information is considered more representative of an actual maximum population at Eagle Mountain since the 1989 census update by Riverside County reflects an average household size based on the retirement community of Lake Tamarisk. The population of Eagle Mountain and the neighborhood communities would also increase somewhat as commercial development is expanded and renovated in the area.

The water and sewer infrastructure for the past Kaiser mining activities at Eagle Mountain would be available with adequate capacity to serve the larger population which would result from implementation of the landfill project. Water consumption within the townsite of Eagle Mountain would increase approximately 145,500 gallons per day (based on a consumption rate of 240 gallons per person according to the Coachella Water District estimate of one acre-foot per year per family). Potable water is presently provided by tanker truck or in bottles. Additional water truck trips would be necessary.

This is not likely to be a long-term solution for potable water use in the townsite. When a specific plan is developed for the townsite, some sort of acceptable defluoridation scheme will need to be part of the overall facility plan. The environmental documentation associated with that specific plan would discuss in greater detail the use of potable water in the town of Eagle Mountain.

Direct and indirect water impacts due to the proposed project would be considered below a level of significance.

An increase in sewage generation of approximately 39,000 gallons per day (based on 240 gallons per unit per day) would exceed the permitted discharge; however, the treatment facility's capacity is adequate for such an increase. If and when the facility's discharge exceeds its permitted discharge, an application to request additional discharge would have to be filed with the Lower Colorado River RWQCB to increase the discharge requirements for the plant facility. The RWQCB would review the application and, if appropriate, could approve the additional discharge. It is reasonable to assume that as long as the discharge did not exceed the plant's capacity, such requirements would be increased and not result in significant impacts.

Leachate produced in the landfill may ultimately go to the existing sewage treatment plant. If within parameters that make the leachate nonhazardous, it may be used on unpaved roads for dust control or placed in open-topped containers to evaporate. Alternatively, it will be delivered by truck to existing sewage treatment plant for disposal. If the treatment does not render the effluent nonhazardous, it will be stored on-site in an approved manner as a hazardous waste and periodically disposed of in accordance with applicable regulations.

If there is sufficient floating organics (oil), it will be passed through a commercial oil skimmer for the removal of the offending compounds. Recovered organics will be collected and stored as hazardous waste and disposed of in accordance with applicable regulations at a licensed facility. If high BOD is noted, the leachate will be passed through an aerator to oxygenate the water. This will lower the BOD. These "pretreatment" facilities will be either permanent or portable, the selection of which will be based on the location of the leachate collection, the quantity of leachate, and so on. Details of the pretreatment facilities will be determined during the permitting process. Ultimately, permanent facilities will be used. Therefore, it is anticipated that potential sewer impacts would be below a level of significance.

The railroad and Eagle Mountain Road right-of-way grants, as well as the exchange of public and private lands, will have no impact on water and sewer services.

Mitigation

Mitigation measures would not be required.

Significance After Mitigation

Impacts are considered not significant.

b. Reduced Landfill Operations Alternative

Impact

This alternative would reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the impacts would be similar to the proposed action.

Mitigation

Mitigation measures would not be required.

Significance After Mitigation

Impacts are considered not significant under this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would also reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the impacts would be similar to the proposed action.

Mitigation

Mitigation measures would not be required.

Significance After Mitigation

Impacts are considered not significant under this alternative.

d. No Action Alternative

Impact

The No Action alternative would retain the site in its current state and not create the additional demand for water and sewer services.

Mitigation

No mitigation would be necessary, as no impacts would occur.

Significance After Mitigation

No significant impacts would result.

2. Fire, Police, and Emergency Medical Services

Assumptions and Assessment Guidelines. The proposed action assumes a generation of 163 jobs which translates into a maximum population increase of 587 persons. The proposed action would result in significant impacts to fire and police services if the needs of the area could not be adequately accommodated by existing services.

a. Proposed Action

Impact

The Riverside County Sheriff's office has indicated that they would not anticipate any significant impact on the department's ability to provide service to the area (Doyle, Riverside County Sheriff, 8/23/89).

Based on the preliminary population increase estimate from the landfill project, the Riverside County Fire Department considers the existing fire protection as inadequate. This impact assessment assumes that the RTCF-required improvements will be implemented. Reactivation and full funding of the Eagle Mountain station with Riverside County personnel is currently a condition of approval for the RTCF expansion. Full funding of the Eagle Mountain fire station (two persons, 24 hours per day, seven days per week) would not provide adequate fire protection for the area once the landfill is operating (Regis, Riverside County Fire Department, 5/31/90). Additional improvements to the existing water system in the housing area and to the landfill project site will be required to provide the required fire flows.

The railroad and Eagle Mountain Road right-of-way grants, as well as the exchange of public and private lands, will have no impact on fire, police, or emergency medical services.

Mitigation

Mitigation measures for police service would not be required. However, the sheriff's department has suggested that the design of the project incorporate site and equipment security by either fencing or maintaining private security personnel. The project design will fence the active use areas of the landfill and limit access to the site from existing jeep trails.

The need for additional fire personnel and equipment beyond that currently proposed for the RTCF at Eagle Mountain is anticipated based on the preliminary population estimates for the project (Regis, 5/31/90). Since the population associated with the landfill would be served by the fire staffing requirements of the RTCF, the project would be required to contribute to the funding of the fire improvements. The following mitigation measures would reduce the fire protection impacts to below the level of significance.

1) The applicant shall submit detailed plot plans of each planning area for review/approval.

2) Prior to the issuance of any use and/or building permits, the project proponents shall:

   a) Obtain a written agreement for fire protection services from the Riverside County Fire Department.

   b) Submit a Fire/Life Safety and Emergency Response Plan to the fire department for review/approval.

   c) Install water mains and fire hydrants that provide the required fire flows pursuant to an improvement plan approved by the fire department.

3) Project proponents shall participate in the fire protection impact mitigation program as adopted by the Riverside County Board of Supervisors.

4) Clearance from the fire department shall be obtained prior to the use and/or occupancy of any existing dwelling units, buildings, or structures located within the Eagle Mountain community and/or the proposed boundaries of the project.

Significance After Mitigation

Police protection impacts are considered insignificant. The mitigation measures listed above will reduce fire protection impacts below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

A reduction in the landfill configuration would not reduce the number of employees needed to operate the landfill. Thus, utility/services demands would be similar to those associated with the proposed action.

Mitigation

To reduce fire protection impacts, the same mitigation measures are recommended as for the proposed action.

Significance After Mitigation

Police protection impacts are considered insignificant. The mitigation measures listed for the proposed action would reduce fire protection impacts to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the impacts would be similar to the proposed action.

Mitigation

To reduce fire protection impacts, the same mitigation measures are recommended as for the proposed action.

Significance After Mitigation

Police protection impacts are not considered significant. The mitigation measures listed for the proposed action would reduce fire protection impacts to below a level of significance.

d. No Action Alternative

Impact

The No Action alternative would retain the site in its current state and not create the additional impacts.

Mitigation

No mitigation would be necessary.

Significance After Mitigation

No significant impacts would occur.

3. Utilities

Assumptions and Assessment Guidelines. The following assessment of utilities service impacts is based on a population increase of 587 persons. The proposed action would result in significant impacts to utilities if the needs of the area could not be adequately accommodated by existing services.

a. Proposed Action

Impact

Significant impacts relating to the demand for electricity, natural gas, and telephone service are not anticipated. Responses to the Notice of Preparation from Southern California Edison (8/31/89) and Southern California Gas Company (8/17/89) indicate that both utilities would be able to serve the project and the town. Telephone and cable television service infrastructure exists at Eagle Mountain and the surrounding communities and significant impacts would not be expected.

The railroad and Eagle Mountain Road right-of-way grants, as well as the exchange of public and private lands, will have no impact on utilities.

Mitigation

Mitigation measures beyond the possible extension of electrical, gas, and telephone lines to project buildings and any new residences at Eagle Mountain, Lake Tamarisk, and Desert Center would not be necessary.

Significance After Mitigation

No significant impact to utilities are anticipated.

b. Reduced Landfill Operations Alternative

Impact

This alternative would reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the demand for utilities would be similar to the proposed action.

Mitigation

No mitigation would be required.

Significance After Mitigation

No significant impacts were identified with this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the demand for utilities would be similar to the proposed action.

Mitigation

No mitigation would be required.

Significance After Mitigation

No significant impacts were identified with this alternative.

d. No Action Alternative

Impact

The No Action alternative would retain the site in its current state and not create the additional impacts.

Mitigation

No mitigation would be required.

Significance After Mitigation

No significant impacts would result.

4. Community Facilities

Assumptions and Assessment Guidelines. The following assessment of impacts on community facilities is based on a population increase of 587 persons. The proposed action would result in significant impacts to community facilities if the needs of the area could not be adequately accommodated by existing services.

a. Proposed Action

Impacts

The population increase from the proposed action would result in additional users of the existing library and recreation facilities at Lake Tamarisk. These facilities could adequately accommodate the new use and significant impacts would not be anticipated. The branch library is currently underutilized and has sufficient space to provide service to a much larger population.

As with the library, the schools at Eagle Mountain are substantially underutilized. Both the elementary school and the middle school are not being used, and the high school currently has 93 students attending grades K-8. With such a large available student capacity, adverse impacts to the Desert Center Unified School District would not be anticipated.

Since the proposed action is a landfill operation which would be able to accommodate solid waste from the surrounding communities, additional impacts to the County sanitary landfill on Kaiser Road would be eliminated.

The railroad and Eagle Mountain Road right-of-way grants, as well as the exchange of public and private lands, will have no impact on community facilities.

Mitigation

No mitigation measures would be required.

Significance After Mitigation

No significant impacts would result from this alternative.

b. Reduced Landfill Operations Alternative

Impact

A reduction in the landfill operations would not reduce the number of employees needed to operate the landfill. Thus, demand on the schools, libraries, and recreation facilities would be similar to that associated with the proposed action.

Mitigation

No mitigation measures would be required.

Significance After Mitigation

No significant impacts would result from this alternative.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would reduce the daily capacity of the landfill to 16,000 tons per day. Since such a reduction would not likely decrease the number of employees needed to operate the landfill, the demand for library, recreation, and school facilities would be similar to the proposed action. Since this alternative would not accommodate solid waste carried by trucks, use of the existing County landfill would continue.

Mitigation

No mitigation measures would be required.

Significance After Mitigation

No significant impacts would result from this alternative.

d. No Action Alternative

Impact

The No Action alternative would retain the site in its current state and not create the additional impacts.

Mitigation

No mitigation measures would be required.

Significance After Mitigation

No significant impacts would result from this alternative.

L. Noise

Potential noise impacts may be separated into five categories: (1) the noise impact of the sorting and loading facilities, (2) the noise impact due to transport of wastes by rail, (3) the noise impact due to project-generated street traffic (waste transport via trucks and incidental vehicle traffic), (4) the noise impact of the proposed landfill operations, and (5) the temporary on-site noise impact due to construction noise.

The proposed BLM/Kaiser land exchange involves BLM lands in or near the proposed landfill site subject to noise impacts from all but the first category of noise impacts mentioned above. These potential impacts are discussed below and are considered below a level of significance. The Kaiser lands to be traded to BLM are located along the Chuckwalla Bench adjacent to the Eagle Mountain rail line. The only sensitive noise receptor in these lands is the state and federally threatened desert tortoise. The potential noise impacts associated with this non-human noise receptor are discussed briefly in the biology section of this draft EIS/EIR and more completely in Appendix F.

1. Transfer Stations

The processing and transfer stations which would send solid waste to the Eagle Mountain landfill are not permitted by any actions covered by this draft EIS/EIR. Since they would be related to this project, however, their operation and potential noise effects are considered possible indirect impacts of the project.

<u>Assumptions and Assessment Guidelines</u>. For purposes of this analysis, three typical locations for processing and transfer stations were reviewed for possible noise impacts. These three locations were identified in an earlier proposal for solid waste service to the San Gabriel Valley. There are no specific proposals to actually construct processing and transfer stations at these locations, but they are typical of sites where such facilities would be located. The three possible sites are in the eastern half of San Gabriel Valley. Two of the sites are south of I-10 and north of State Highway 60. For reference, they have been named the Valley Boulevard site and the Cypress Street site. The third site, herein referred to as the La Verne site, is located north of I-10. Appendix H contains more descriptive information regarding these locations.

In community noise assessment for this draft EIS/EIR, changes in noise levels greater than 3 dBA will be identified as significant. Noise level changes in the range of 1 to 3 dBA will be considered noticeable, but not significant. Noise level increases below 1 dBA will not be considered significant. In addition to the noise level increase being significant, two other conditions must exist before the significant increase in noise level will constitute a significant impact. These two conditions are that there must be some sort of noise-sensitive land uses

(such as residential areas) near the noise source that will be impacted and that the 65 CNEL noise contour must extend far enough from the noise source to impact any residential areas.

a. Proposed Action

Impacts

The pieces of equipment that would be operating at the sorting and loading stations include scales, front-end loaders, compactors, container-top handlers, shuttle trucks, conveyors, and sweepers.

The Valley Boulevard site is surrounded by industrial developments and several undeveloped parcels. The existing zone for the Valley Boulevard site is M, Industrial. These land uses are not highly sensitive to noise. Therefore, noise generated from the proposed sorting and loading operations at the Valley Boulevard site should not adversely affect surrounding land uses.

The existing zoning for the Cypress Street site and surrounding parcels is M-2, Manufacturing. The Cypress Street site includes four acres of Southern Pacific property (a rail yard) and land in an adjacent parcel that is being developed as an industrial site. These surrounding land uses are not considered noise-sensitive, and therefore, noise generated from the proposed sorting and loading operations at the Cypress Street site should not constitute a significant or adverse noise impact.

The La Verne site is bordered on the east and west by an industrial park. Brackett Field occurs south of the site, and north of I-10. To the north, opposite the Southern Pacific main line, are residential areas. The industrial areas east and west of the La Verne site and Brackett Field to the south are not sensitive to noise. Noise generated from the proposed sorting and loading operations would therefore not adversely impact land uses to the east, west, and south of the La Verne site. However, the residential areas north of the La Verne site are considered noise-sensitive and, as such, might experience adverse noise levels as a result of sorting and loading operations. The occurrence and extent of the impact, if any, would be dependent on the existing noise levels at this location due to the current train operations in the area and the precise design of the processing and transfer station if it were to be constructed at this location.

Mitigation

For the three sample locations considered, no adverse noise impacts would be expected at two sites: the Valley Boulevard and Cypress Street sites. Residential areas north of the La Verne site might be adversely affected by noise from a processing and transfer station. A more detailed study of the loading facilities and operations is required to identify the specific noise impact on and subsequent mitigation for these residential areas. Typical noise mitigation measures which would be expected include (1) the selection of specific equipment items for

lower noise emissions; (2) a site design which isolates noise-producing activities in an area farthest from residential receptors, with structures or other noise barriers placed in between; and (3) restrictions on operating hours. Details of these mitigation measures would have to be determined in a site-specific noise analysis.

Performance of a site-specific noise analysis for any new processing and transfer stations is reasonably assured since the construction of a station would be subject to a local conditional use permit and its own solid waste facilities permit. Both of these discretionary actions require environmental review. Thus, even though the construction of the processing and transfer stations is not covered by this draft EIS/EIR, the regulatory mechanism exists to more clearly identify the potential impacts and mitigation measures from these noise sources.

Significance After Mitigation

All new transfer stations will be subject to environmental review once a site is proposed. A noise analysis will be necessary and appropriate mitigation measures should reduce any significant noise impacts below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

The effects of this alternative would be the same as those for the proposed action.

Mitigation

The mitigation would be the same as that for the proposed action.

Significance After Mitigation

See Proposed Action above.

c. Proposed Action with Rail Access Only Alternative

Impact

Under this alternative, noise impacts as a result of sorting and loading operations would be the same as those identified for the proposed action.

Mitigation

The mitigation would be the same as that for the proposed action.

Significance After Mitigation

See Proposed Action above.

d. No Action Alternative

Impact

Under the No Action alternative, all noise impacts identified with the proposed action would be avoided. As conventional landfills closer to the metropolitan areas become filled and closed, however, it is expected that more processing and transfer stations will be constructed to support transport of solid waste to more distant landfills. Thus, the effects of transfer stations would occur at some time in the future with or without the Eagle Mountain project.

Mitigation

The mitigation would be the same as that for the proposed action.

Significance After Mitigation

See Proposed Action above.

2. Waste Transport Via Rail

<u>Assumptions and Assessment Guidelines</u>. Existing noise levels close to the Southern Pacific rail line already exceed maximum noise levels for noise-sensitive land uses (i.e., 60 and 65 dBA CNEL). In community noise assessment for this draft EIS/EIR, changes in noise levels greater than 3 dBA will be identified as significant. Noise level changes in the range of 1 to 3 dBA will be considered noticeable, but not significant. Noise level increases below 1 dBA will not be considered significant. In addition to the noise level increase being significant, two other conditions must exist before the significant increase in noise level will constitute a significant impact. These two conditions are that (1) there must be some sort of noise-sensitive land uses (such as residential areas) near the noise source that will be impacted and (2) the 65 CNEL noise contour must extend far enough from the noise source to impact any residential areas.

The Eagle Mountain railroad is currently not in use and existing noise levels along the rail corridor are generally low. Noise levels along the Eagle Mountain rail line in excess of 65 CNEL would be considered a significant impact.

a. Proposed Action

Impact

Project rail transport would be along the Southern Pacific main line from San Gabriel Valley loading stations to Ferrum Junction in Riverside County. At Ferrum Junction, the rail transport would be switched to a private line, the Eagle Mountain railroad, that runs directly to the Eagle Mountain disposal site (approximately 52 miles from Ferrum Junction). During the first phase of the project, a single train (two train trips) would serve the project site via the existing rail line which terminates south of the western portion of the East Pit. When demand justifies more than a single train per day, a new rail spur would be built off the Eagle Mountain rail line southeast of the existing landing strip, terminating in the Phase II container handling yard. The new spur would be approximately two miles long and would carry traffic to the eastern portion of the project area, away from the town of Eagle Mountain. In Phase II, the proposed Eagle Mountain landfill expects to utilize a maximum of six trains per day. The six trains would operate in each direction, for a total of 12 train trips or pass-bys per day. Each train would have an average of 14 cars. An average speed of 50 MPH is assumed for this study.

For the Southern Pacific rail line, the addition of the project-generated train traffic to the existing train traffic would slightly increase (+0.7 dB) noise levels along the rail corridor. This noise increase due to the increase in train traffic is shown below in Table 43.

TABLE 43
NOISE LEVEL INCREASE ON SOUTHERN PACIFIC RAIL LINE DUE TO PROJECT-GENERATED TRAIN TRAFFIC

Distance to CNEL Level	Existing CNEL Level	Project CNEL Level	Existing + Project CNEL Level	Noise Level Increase (dB)
100 ft.	74	66.6	74.7	+0.7

As can be seen from Table 43, the noise level increase of 0.7 dB that would be experienced by residential areas 100 feet from the Southern Pacific rail line is not considered significant.

The Eagle Mountain railroad is currently not in use. Existing noise levels along the rail corridor are generally low. To determine the future noise levels due to the Eagle Mountain rail line that would be utilized for the project between Ferrum Junction and Eagle Mountain, the Wyle train noise model was used. The proposed railroad operations data were used to determine train noise levels at various distances. The noise levels anticipated to be generated by the use of the Eagle Mountain rail line are shown below in Table 44.

TABLE 44
PROPOSED EAGLE MOUNTAIN RAILROAD NOISE LEVELS

Distance (feet)	100	200	300	400	500	700	1,000	2,000	5,000
CNEL (dBA)	66.6	62.8	59.6	57.3	55.6	53.0	50.2	44.8	37.8

Land uses along the Eagle Mountain rail corridor that lie within 100 feet of the rail line would experience noise levels in excess of 65 CNEL due to full operation of the project-generated train traffic (12 train trips per day). The residential noise threshold contours of 65 and 60 dBA CNEL would extend roughly 150 feet and 300 feet, respectively, from the edge of the Eagle Mountain railroad. In the vicinity of the Eagle Mountain townsite, the full level of train activity would be associated with the Phase II location of the container handling yard, at the eastern end of the East Pit. The new rail alignment proposed to serve this area is located approximately 1.5 miles from the nearest residential or school uses. Thus, the noise levels from the train operations in this area would not cause a significant impact.

The existing return-to-custody facility is approximately 150 feet from the Eagle Mountain rail line at its closest point. Enrollees of this facility would be exposed to potentially significant train noise levels if the full train operation of the project were to occur along this segment of track. Near the location of the RTCF, however, only the Phase I level of operations would occur. At this level of activity (one train, or two train trips, per day) the projected CNEL at 150 feet would be approximately 61 dBA. This would not represent a significant noise impact.

Mitigation

Noise levels resulting from the Southern Pacific railroad presently exceed the 60 and 65 dBA CNEL maximum considered acceptable for single- and multiple-family residential land use. The proposed action would generate additional train trips and a resulting noise increase of 0.7 decibel along the Southern Pacific rail corridor. This slight increase is not considered significant and does not require mitigation.

A specific plan covering the Eagle Mountain townsite is currently being prepared. To provide compatibility between the noise levels from the rail operations and land uses to be established in the townsite specific plan, buffering distances of 150 feet (distance to 65 CNEL) and 300 feet (distance to 60 CNEL) should be provided between the rail line and multiple-family housing and single-family housing, respectively. Given the relationship between the existing uses in the townsite and the new rail spur which is proposed for the Phase II access to the Eagle Mountain landfill, design of these buffering distances is feasible. Implementation of this measure would be accomplished through the County Planning Department on the Eagle Mountain townsite specific plan.

Significance After Mitigation

Noise impacts along the Southern Pacific and Eagle Mountain rail corridor are not significant.

b. Reduced Landfill Operations Alternative

Impact

The effects of this alternative would be the same as those for the proposed action.

Mitigation

Mitigation is the same as for the proposed action. No additional mitigation is required.

Significance After Mitigation

Noise impacts along the Southern Pacific and Eagle Mountain rail corridor are not significant.

c. Proposed Action with Rail Access Only Alternative

Impact

Under this alternative, noise impacts would be the same as those identified for the proposed action.

Mitigation

Mitigation is the same as for the proposed action. No additional mitigation is required.

Significance After Mitigation

Noise impacts along the Southern Pacific and Eagle Mountain rail corridor are not significant.

d. No Action Alternative

Impact

Under the No Action alternative, all noise impacts identified with the proposed action would be avoided.

Mitigation

None is required.

Significance After Mitigation

Noise impacts along the Southern Pacific and Eagle Mountain rail corridor are not significant.

3. Project-related Vehicle Traffic

Assumptions and Assessment Guidelines. Future traffic noise levels were determined by modeling the subject roadways for the traffic characteristics defined in the traffic study prepared for the proposed action by DKS Associates. The project-generated traffic would include an addition of 400 truck trips per day along Eagle Mountain Road and employee and incidental traffic amounting to about 500 trips per day along Kaiser Road. Those roadways that might carry project-generated traffic were modeled using the FHWA traffic noise model (FHWA 1978).

In community noise assessment for this draft EIS/EIR, changes in noise levels greater than 3 dBA will be identified as significant. Noise level changes in the range of 1 to 3 dBA will be considered noticeable, but not significant. Noise level increases below 1 dBA will not be considered significant. In addition to the noise level increase being significant, two other conditions must exist before the significant increase in noise level will constitute a significant impact. These two conditions are that (a) there must be some sort of noise-sensitive land uses (such as residential areas) along the roadway that will be impacted and (b) the ultimate traffic volume must be great enough to have a significant impact, which means that the 65 CNEL noise contour must extend far enough from the roadway centerline to impact any residential areas.

a. Proposed Action

Impact

Future (year 1995) traffic/noise conditions without the proposed action and future traffic/noise conditions with the proposed action were calculated to provide comparison and determination of project-generated impacts. The distances to the CNEL contours for future with and without project scenarios are given in Tables 45 and 46. These distances are measured from the roadway centerline to the contour value shown. These projections do not take into account the effects of topography or intervening barriers that might alter ambient noise levels and, as such, represent a worst case.

TABLE 45
FUTURE WITHOUT PROJECT ROADWAY NOISE LEVELS

Roadway	Distance to CNEL Contour (Feet) 70 CNEL	65 CNEL	60 CNEL
Eagle Mountain Road			
I-10 eastbound to I-10 westbound	RW	RW	RW
I-10 westbound to Ragsdale Road	RW	RW	RW
North of Ragsdale Road	RW	RW	RW
Kaiser Road			
I-10 westbound to Ragsdale Road	RW	RW	49
Ragsdale Road to Lake Tamarisk Drive	RW	RW	RW
North of Lake Tamarisk Drive	RW	RW	RW
Interstate 10			
Eagle Mountain Road to Kaiser Road	185	399	860

RW - Denotes that the CNEL contour does not extend beyond the roadway edge.

TABLE 46
FUTURE WITH PROJECT ROADWAY NOISE LEVELS

Roadway	Distance to CNEL Contour (Feet) 70 CNEL	65 CNEL	60 CNEL
Eagle Mountain Road			
I-10 eastbound to I-10 westbound	RW	RW	RW
I-10 westbound to Ragsdale Road	RW	RW	RW
North of Ragsdale Road	RW	RW	RW
Kaiser Road			
I-10 westbound to Ragsdale Road	RW	RW	49
Ragsdale Road to Lake Tamarisk Drive	RW	RW	RW
North of Lake Tamarisk Drive	RW	RW	RW
Interstate 10			
Eagle Mountain Road to Kaiser Road	194	418	901

RW - Denotes that the CNEL contour does not extend beyond the roadway edge.

The calculated noise increase of the future plus project levels over the future without project levels is shown in Table 47.

The results show that there would be some increase in roadway noise levels due to the project. The roadway with the greatest increase in noise level is Eagle Mountain Road north of Ragsdale Road, with an increase of 11.9 dBA. The other links along Eagle Mountain Road from I-10 to Ragsdale Road will also have noise increases of 9.5 to 10 dB. While these increases are large relative to the existing noise levels in the area, they are not considered significant because the resulting CNEL values are well below the 60 dBA criteria for most sensitive land uses. All other roadways would experience increases in noise levels of less than 1 dB.

Scattered residential areas occur along Kaiser Road as near as 100 feet from the roadway centerline. Residential areas also occur roughly 200 feet from the roadway centerline of I-10. Table 48 shows the noise levels that would be experienced by these worst-case residential areas.

Residential areas located adjacent to Eagle Mountain and Kaiser Roads would not be exposed to significant noise levels in excess of 65 CNEL. Observed residential uses at 200 feet from I-10 would be exposed to CNELs greater than 65; however, existing noise levels already exceeded 65 CNEL. This is not considered a significant impact. Some undeveloped areas designated as residential that are adjacent to roadways that will carry project-related traffic may have homes built on them in the future. If these homes are planned within the roadway 65 CNEL contour line, mitigation measures may be required. Residences close to I-10 may experience CNELs above 65 dBA where existing noise levels already exceed 65 CNEL.

Over the life of the project, it is possible that an interruption of rail service might occur as a result of an earthquake, other acts of God, or rail strike. In these cases, it is anticipated that the inability to deliver refuse by rail would be covered by trucks until rail service can be restored. It is expected that such occurrences would be infrequent and of short duration; therefore, the noise impacts would not be significant.

Mitigation

In order to ensure that the project-related truck traffic does not exacerbate the impacts to I-10, all truck traffic will be required to use the Eagle Mountain Road interchange and access to the project site. This will be included as a requirement in the landfill specific plan. No other mitigation related to vehicle traffic should be necessary.

Significance After Mitigation

The mitigation stated above reduces traffic noise related to the project to below a level of significance.

TABLE 47
INCREASE IN NOISE LEVELS DUE TO PROJECT TRAFFIC

Roadway	CNEL Noise Levels at 100 Feet Future w/o Project CNEL	 Future With Project CNEL	 Increase Due to Project (dB)
Eagle Mountain Road			
I-10 eastbound to I-10 westbound	38.7	48.2	9.5
I-10 westbound to Ragsdale Road	41.0	51.0	10.0
North of Ragsdale Road	39.0	50.9	11.9
Kaiser Road			
I-10 westbound to Ragsdale Road	55.4	55.4	0.0
Ragsdale Road to Lake Tamarisk Drive	48.2	48.7	0.5
North of Lake Tamarisk Drive	46.6	47.3	0.7
Interstate 10			
Eagle Mountain Road to Kaiser Road	74.0	74.3	0.3

TABLE 48
NOISE LEVELS AT WORST CASE RESIDENTIAL AREAS
100 FEET FROM ROADWAY CENTERLINE

Roadway	CNEL at 100 feet	CNEL at 200 feet
Eagle Mountain Road		
I-10 eastbound to I-10 westbound	48.2	--
I-10 westbound to Ragsdale Road	51.0	--
North of Ragsdale Road	50.9	--
Kaiser Road		
I-10 westbound to Ragsdale Road	55.4	--
Ragsdale Road to Lake Tamarisk Drive	48.7	--
North of Lake Tamarisk Drive	47.3	--
Interstate 10		
Eagle Mountain Road to Kaiser Road	--	69.8

b. Reduced Landfill Operations Alternative

Impact

The effects of this alternative would be the same as those for the proposed action.

Mitigation

The mitigation required for this alternative is the same as that of the proposed action.

Significance After Mitigation

The mitigation stated above reduces traffic noise related to the project to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would eliminate all refuse hauling by truck, thereby reducing traffic volumes and resultant noise levels on both a regional and local basis.

Mitigation

No mitigation is required.

Significance After Mitigation

All significant impacts due to truck noise would be eliminated with this alternative.

d. No Action Alternative

Impact

Under the No Action alternative, all noise impacts identified with the proposed action would be avoided.

Mitigation

No mitigation is required.

Significance After Mitigation

All impacts due to truck noise would be eliminated with this alternative.

4. On-site Landfill Operations

Assumptions and Assessment Guidelines. In community noise assessment for this draft EIS/EIR, changes in noise levels greater than 3 dBA will be identified as significant. Noise level changes in the range of 1 to 3 dBA will be considered noticeable, but not significant. Noise level increases below 1 dBA will not be considered significant. In addition to the noise level increase being significant, two other conditions must exist before the significant increase in noise level will constitute a significant impact. These two conditions are that (a) there must be some sort of noise-sensitive land uses (such as residential areas) near the noise source that will be impacted and (b) the 65 CNEL noise contour must extend far enough from the noise source to impact any residential areas.

a. Proposed Action

Impact

On-site equipment noise will be generated by a number of operations located in several areas of the landfill. This equipment may be divided into three types including landfill operation, container handling yard, and pug mill equipment. A list of the equipment that may be used at the landfill site was supplied by SCS Engineering. Noise levels for the earth moving equipment to be used were obtained from the Caterpillar Tractor Company (Burgstrom, 2/27/90). The earth-moving equipment made by Caterpillar Tractor Company include D-8N crawler tractors, 826 compactors, a 973 trac-loader, 12G graders, and 988 wheel loaders (Table 49). Noise levels for the remainder of the equipment were obtained from the table of construction equipment noise levels compiled by the Environmental Protection Agency as shown in Figure 98. The equipment noise levels obtained from the EPA table are not necessarily noise levels of the exact equipment that will be used for the project. The EPA table shows the range of noise levels measured for various pieces of equipment of a certain type, and the maximum noise levels of the loudest pieces of equipment measured were used in the calculation. All the equipment noise levels were measured at a distance of 50 feet and are shown below in Table 49. The sound level data represent the peak or maximum sound level. These sound levels occur only occasionally.

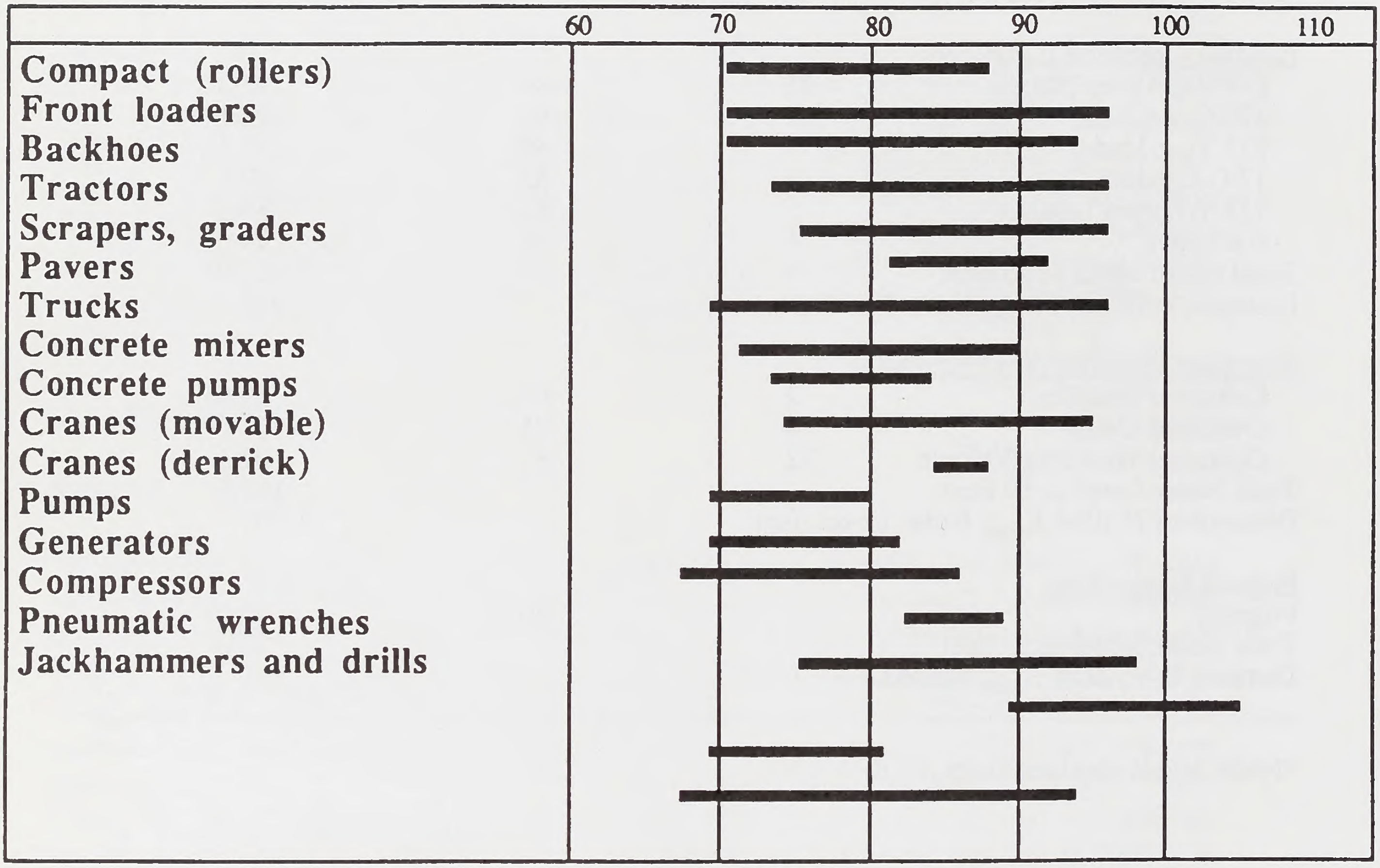
In Table 49, the noise levels of all the equipment expected to operate at the landfill pit area, container handling yard, and pug mill were separated. Then, the equipment noise levels operating at each facility were summed up, and the distances to the 75 dBA noise level were found. Although Riverside County does not have a noise ordinance, 75 dBA is a typical L_{max} noise level not to be exceeded at any time. Figure 99 shows the combined 75 dBA noise contour

TABLE 49
ON-SITE EQUIPMENT NOISE LEVELS
FROM THE CATERPILLAR TRACTOR CO. (dBA)

Equipment	Number of Vehicles	Noise Level at at 50 feet (dBA)	Combined Noise Level at 50 Feet (dBA)
Landfill Operation Equipment			
D-8N Crawler Tractor	15	84	95.8
826 Compactor	13	80	91.1
973 Trac-loader	7	87	95.5
12 G Graders	3	83	87.8
988 Wheeled Loader	5	82	89.0
Backhoes	1	94	94.0*
Total Noise Level at 50 Feet			101.0
Distance to 75 dBA L_{max} Noise Level (feet)			993
Container Handling Yard Equipment			
Container Handler	2	96	99.0*
Overhead Crane	4	95	101.0*
Container Handling Vehicle	32	87	102.1
Total Noise Level at 50 Feet			105.6
Distance to 75 dBA L_{max} Noise Level (feet)			1,702
Pugmill Equipment			
Pugmill	1	90	90.0*
Total Noise Level at 50 Feet			90.0
Distance to 75 dBA L_{max} Noise Level (feet)			281

*Noise levels obtained from the EPA table.

A-Weighted Sound Level (dBA) at 50 feet



Source: "Handbook of Noise Control," by Cyril Harris, 1979.

FIGURE 98. CONSTRUCTION EQUIPMENT NOISE LEVELS

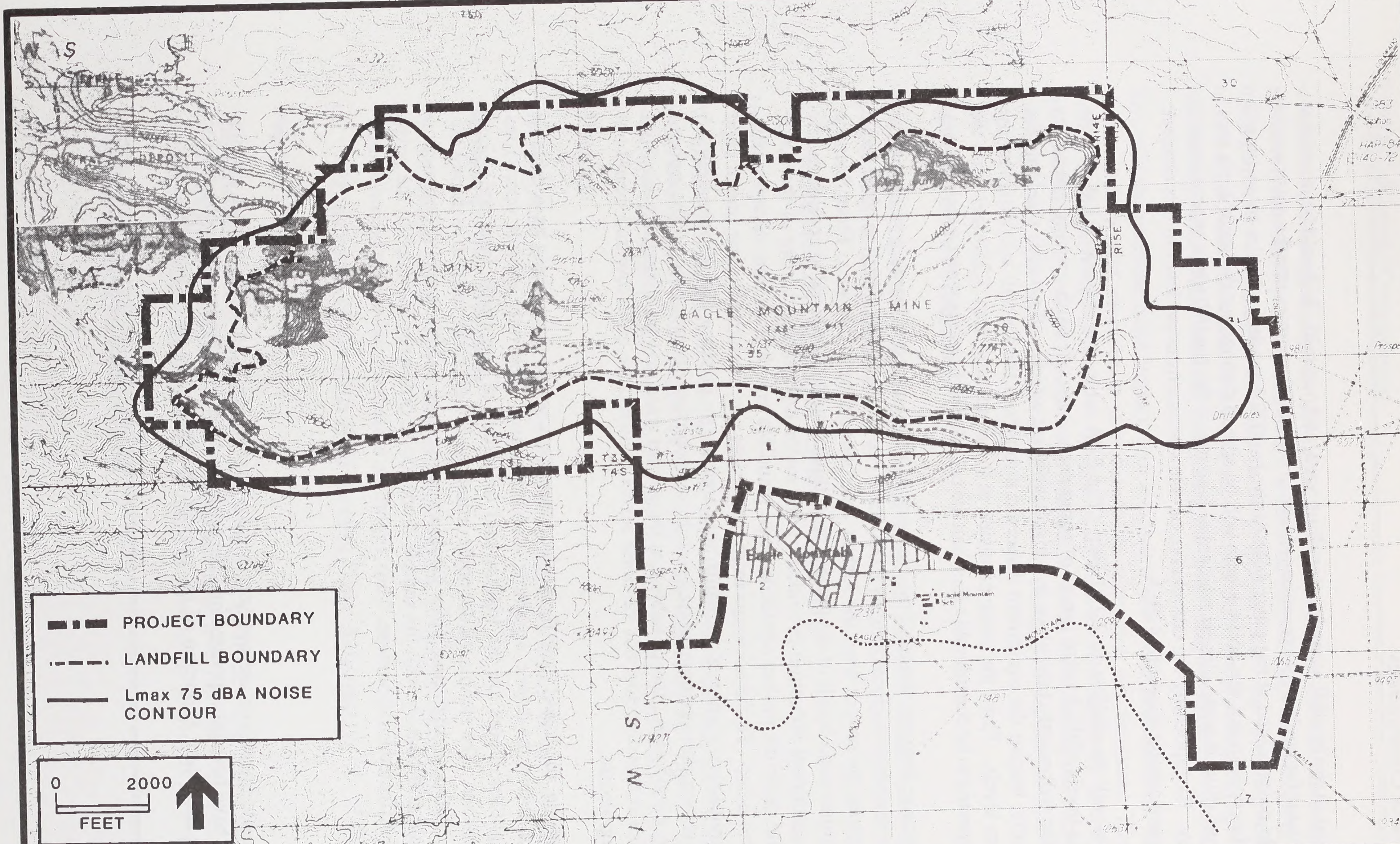


FIGURE 99. 75 dBA Lmax NOISE CONTOUR FOR LANDFILL OPERATIONS

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due to operations at the landfill, container handling yard, and pug mill. It should be noted that the 75 dBA contour for landfill pit operations shown in Figure 99 assumes that the noise source is from a single point placed at the outer edge of the landfill boundary. Under more typical landfill operation conditions, the noise source will be spread throughout the landfill pit area. Site observations show that the closest residential land use to the landfill pit is approximately 2,250 feet away. Extrapolating the cumulative on-site operations noise level to this distance of 2,250 feet gives a noise level of 74 dBA.

This noise level will be audible at 2,250 feet. The EPA table (see Figure 98) shows the maximum noise levels of the loudest pieces of equipment. Also, the earth-moving operations at the project site will mostly take place inside a landfill pit which will provide shielding for the noise. Finally, having the equipment dispersed throughout the landfill will dissipate the noise generation levels. Thus, the noise exposure at the residential area 2,250 feet from the landfill pit is expected to be considerably less than the calculation from the worst-case scenario.

The shortest distance between Joshua Tree National Monument and wilderness areas and the northern project boundary is approximately 8,000 feet. The northernmost ridgeline of the Eagle Mountains separates the project from the Joshua Tree boundaries in this area. From distance alone, the maximum noise levels of the project operations would be reduced to approximately 49 dBA. The additional reduction provided by the major topographic barrier of the Eagle Mountains would make the project operation noise inaudible or indistinct from distant traffic, aircraft, and wind noise. To the northeast from the project site, a relatively clear line of sight exists to the southeastern corner of the wilderness area over a distance of approximately 4.5 miles. At this distance, the maximum noise levels from the project operations would be reduced to approximately 40–45 dBA. It is possible that the project noise may be distinguishable from background noise at this distance, but the noise levels involved are quite low and would not be considered significant.

During the nighttime, the sound from the project operations would more likely be audible to nearby residents above the lower nighttime ambient noise. The only project operations proposed for nighttime hours are the loading and unloading of containers from trains and maintenance activities. The sample model noise ordinance is 5 dB more restrictive during the nighttime hours. Although nighttime noise would more likely be audible, project construction noise levels would still comply with the sample model noise ordinance included in the noise discussion under Affected Environment. Thus, nighttime noise levels would not be considered a significant impact.

Mitigation

Although the on-site operations are not expected to cause a significant noise impact, certain design measures have been incorporated into the project which would reduce the potential for impacts. During the Phase II portion of the project, the equipment noise from this activity

would be located approximately 1.5 miles from the nearest residential areas and would be effectively shielded by the existing berms around the fine tailing ponds remaining from the old mining operation. Operations associated with the landfill itself—the spreading and compaction of refuse and the placement of daily cover—would occur only during daylight hours, thus eliminating noise from these activities during the more sensitive nighttime periods.

To avoid the potential noise impact from removal of the cover material from the tailing pile nearest the townsite, measures to minimize noise generation will be taken. These measures include maintenance of the body of the pile to serve as a noise barrier for as long as possible and specific restrictions on operations in this area to avoid noise during the evening and early morning hours. The layout of the operations will be designed to reduce the noise levels on the site.

Significance After Mitigation

The measures included in the project design stated above would reduce noise-related impact to below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

The effects of this alternative would be the same as those for the proposed action. The areas which would be left natural under this alternative are well removed from the residential uses in the townsite of Eagle Mountain and would not provide any benefit from a noise viewpoint.

Mitigation

The mitigation required for this alternative is the same as that of the proposed action.

Significance After Mitigation

The mitigation stated above reduces noise related to this alternative below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would eliminate all refuse hauling by truck. The minor change in on-site operations under this alternative would not affect noise levels in and around the project. Thus, this alternative would not provide any benefits relative to the project as proposed.

Mitigation

No mitigation is required.

Significance After Mitigation

All significant impacts due to operational noise would be eliminated with this alternative.

d. No Action Alternative

Impact

Under the No Action alternative, all noise impacts identified with the proposed action would be avoided.

Mitigation

No mitigation is required.

Significance After Mitigation

All significant impacts due to landfill operational noise would be eliminated with this alternative.

5. Construction Noise

Assumptions and Assessment Guidelines. In community noise assessment for this draft EIS/EIR, changes in noise levels greater than 3 dBA will be identified as significant. Noise level changes in the range of 1 to 3 dBA will be considered noticeable, but not significant. Noise level increases below 1 dBA will not be considered significant. In addition to the noise level increase being significant, two other conditions must exist before the significant increase in noise level will constitute a significant impact. These two conditions are that (a) there must be some sort of noise-sensitive land uses (such as residential areas) near the noise source that will be impacted and (b) the 65 CNEL noise contour must extend far enough from the noise source to impact any residential areas.

a. Proposed Action

Impacts

Construction noise would occur as a result of the development of the proposed action. Construction equipment noise levels are shown in Figure 98. These noise levels are referenced to 50 feet. At 100 feet, these noise levels would be 6 dBA less; at 2,000 feet, 32 dBA less.

The nearest existing residential land uses are situated approximately one-quarter mile southeast of where the nearest construction for the project would occur (the site of the Phase I container handling yard). Therefore, the residential areas of the town of Eagle Mountain would not be adversely impacted by construction noise.

Mitigation

No mitigation measures for construction noise effects are necessary.

Significance After Mitigation

Construction noise is not considered significant.

b. Reduced Landfill Operations Alternative

Impact

The effects of this alternative would be the same as those for the proposed action. The level of construction activity necessary to prepare the site for operations under this alternative would be identical with that for the project as proposed.

Mitigation

No mitigation measures for construction noise effects are necessary.

Significance After Mitigation

Construction noise is not considered significant.

c. Proposed Action with Rail Access Only Alternative

Impact

The construction noise effects under this alternative would be the same as those identified for the proposed action.

Mitigation

No mitigation measures for construction noise effects are necessary.

Significance After Mitigation

Construction noise is not considered significant.

d. No Action Alternative

Impact

Under the No Action alternative, all noise impacts identified with the proposed action would be avoided.

Mitigation

No mitigation measures for construction noise effects are necessary.

Significance After Mitigation

Construction noise is not considered significant.

6. Non-Human Noise-Sensitive Receptors

Assumptions and Assessment Guidelines. In addition to the noise-sensitive human receptors addressed thus far in this discussion, some animal species are sensitive to noise. The effects of sound on animals include hearing impairment, communication masking, nonauditory physiological effects, and behavioral modifications. These effects may lead to loss of habitat and territory; loss of food supply; behavioral changes modifying mating, predation, and migration; and changes in interspecific relationships including predator/prey and competition for food and shelter.

The Coachella Valley fringe-toed lizard, a state and federally threatened wildlife species, occurs along areas of the Southern Pacific rail line. The potential exists for indirect noise impacts to

occur to this species due to the increased use of the rail line. These are discussed in the Cumulative Impacts section of this draft EIS/EIR under noise and are considered not significant.

The desert tortoise, a state and federally threatened wildlife species, occurs along portions of the Eagle Mountain railroad and just to the south of the Eagle Mountain townsite. The potential exists for direct noise impacts to occur to this species due to the increased use of the rail line. These are discussed in the biology technical report of this draft EIS/EIR (Appendix F) and are considered not significant.

M. Cultural Resources

Assumptions and Assessment Guidelines. Archaeological sites are nonrenewable historic and scientific resources, and any disturbance or disruption of a site must be considered as potentially serious. For the following analysis of impacts from the proposed project to cultural resources, all sites will be considered significant until they have been properly documented and the Bureau of Land Management, in conjunction with the Office of Historic Preservation, has concurred that the sites are not eligible for the National Register of Historic Places.

Under the National Historic Preservation Act (NHPA) and as directed in the Advisory Council on Historic Preservation regulations, "Protection of Historic Properties," the BLM:

> has the legal responsibility for complying with Section 106. It is the responsibility of the Agency Official to identify and evaluate affected historic properties, assess an undertaking's effect upon them, and afford the Council its comment opportunity (36 CFR 800.1).
>
> In consultation with the State Historic Preservation Officer, the Agency Official shall make a reasonable and good faith effort to identify historic properties that may be affected by the undertaking and gather sufficient information to evaluate the eligibility of the properties for the National Register (36 CFR 800.4).

The project must also comply with the requirements for consideration of cultural resources as cited in CEQA, Public Resources Code Section 21083.2, and Appendix K of the CEQA Guidelines. Under these laws,

> . . . the lead agency shall determine whether the project may have a significant effect on archaeological resources. If the lead agency determines that the project may have a significant effect on unique archaeological resources, the environmental impact report shall address the issue of those resources (Public Resources Code Section 21083.2).

For the following environmental analysis, impacts will also be considered significant if the proposed action or project were to result in encroachment upon a site having special meaning, either religious or cultural, for Native Americans whose traditional territory lies within the area.

1. Eagle Mountain Iron Mine Including BLM Exchange Lands

a. Proposed Action

No cultural resources were located within this area, and the ethnographic study did not identify any Native American concerns. No impacts would result from the proposed project and no mitigation is required.

b. Reduced Landfill Operations Alternative

No cultural resources were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

c. Rail Access Only Alternative

No cultural resources were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

d. No Action Alternative

No cultural resources were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

2. Road and Rail Ways

a. Riv-3798

Proposed Action

Actions related to the railroad which will result from implementation of the proposed project consist of transportation of trash along the rail line, rehabilitation of the railroad, and probable replacement of unstable trestles. No trestles exist near identified cultural resource areas. Rehabilitation of the railroad and required maintenance activities will include track straightening and alignment, ballast regulation, culvert cleanout and repair, vegetation control, and oiler maintenance. The proposed railroad rehabilitation activities will not involve excavations or movement of dirt.

Impact. No remains of site Riv-3798 are in proximity to the railroad, as the construction of the railroad created a 10-meter-deep cut removing the center of the site. The railroad tracks and associated debris resulting from periodic repair (railroad ties, metal stakes, and metal) lie at the base of the 10-meter cut. A 3- to 5-meter-high and 8-meter-wide excavation backdirt pile of pink clay subsoil lies 6 meters southeast and parallel to the southeast edge of the railroad cut. Additional surface remains were observed on the south side of the backdirt pile which resulted from the excavation of the railroad cut. The eroded remains of a road track are located 14 meters from the edge of the northwest slope. One additional disturbance factor at the site is the erosion down the slopes of the knoll which has been intensified by the railroad cut excavation, the placement of the backdirt pile, and an old road north of the railroad cut.

One hundred thirty-seven mapped surface artifacts were located on either side of the railroad cut, from the edge of the top of the cut to a distance of approximately 40 meters on the northwest

and 23 meters on the southeast. The mapped surface artifacts within this area were collected at the time of the initial survey. Additional artifactual materials located outside of the approximately 75-meter northwest to southeast diameter area were not collected.

With the permission of the BLM, five surfaces of the railroad cut were faced and documented. These revealed that no subsurface remains of the site exist in the remaining site area adjacent to the railroad. Therefore, because no project elements would disturb areas outside of the railroad cut, the project would have no effect on the remaining portion of site Riv-3798. No further action is recommended.

Mitigation. Because project activities associated with the use and rehabilitation of the railroad will not affect the remains of site Riv-3798, no mitigation measures are required.

Significance After Mitigation. No significant impacts to cultural resources are identified for this site.

Reduced Landfill Operations Alternative

Impact. The potential impacts under this alternative are identical with those of the proposed action.

Mitigation. The recommended mitigation measures, and their effectiveness, are the same as for the proposed action.

Significance After Mitigation. No significant impacts to cultural resources are identified for this site.

Rail Access Only Alternative

Impact. This alternative would involve rail operations similar to those of the proposed project, and the potential for impacts would be the same as for the proposed project.

Mitigation. The recommended mitigation measures, and their effectiveness, are the same as for the proposed action.

Significance After Mitigation. No significant impacts to cultural resources are identified for this site.

No Action Alternative

Impact. No impacts would occur to cultural resources under this alternative.

Mitigation. Since there are no impacts associated with this alternative, no mitigation measures are deemed necessary.

Significance After Mitigation. No significant impacts would occur.

b. Riv-3216

Proposed Action

Impact. This site, described in the initial site record form as a lithic scatter with tools and cores, was not relocated and does not lie within the 200-foot corridor surveyed, even though it was recorded as being close to the intersection of the Imperial Irrigation District 230-kilovolt power line and the Eagle Mountain rail line. While it was not found during the survey, the possibility of its continued existence outside the right-of-way must be recognized. Since it has been established that the site is outside the area of potential effect, no direct impact to it should result from completion of the project.

Mitigation. Because the construction of the project will have no direct impact on Riv-3216, mitigation procedures are not appropriate.

Significance After Mitigation. No significant impacts are anticipated from the proposed action.

Reduced Landfill Operations Alternative

Impact. This alternative would not have any effects on this site.

Mitigation. Since there are no impacts, no mitigation would be required.

Significance After Mitigation. No impacts would occur.

Rail Access Only Alternative

Impact. Relative to activities along the rail line, this alternative is identical with the proposed project, and it would not have any significant effect on Riv-3216.

Mitigation. No mitigation measures are required.

Significance After Mitigation. There would be no significant impacts under this alternative.

No Action Alternative

Impacts. This alternative would have an even lower potential to impact Riv-3216 than the project, but the difference is not distinguishable from the project as proposed.

Mitigation. No mitigation measures would be necessary.

Significance After Mitigation. No significant impacts would occur.

3. Land Exchange

a. Proposed Action

Nine isolated artifacts were located within the lands proposed for exchange. These included eight flakes and one potsherd. None of these isolates qualify as eligible for the National Register or as unique resources under CEQA. Recordation of these isolated artifacts has exhausted their potential to aid archaeological research. No impact from the land exchange portion of the proposed project is anticipated and no mitigation measures are recommended.

b. Reduced Landfill Operations Alternative

No cultural resources which are potentially eligible for the National Register were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

c. Rail Access Only Alternative

No cultural resources which are potentially eligible for the National Register were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

d. No Project Alternative

No cultural resources which are potentially eligible for the National Register were located within the areas, and therefore, no impacts would result from this alternative. No mitigation is required.

4. Native American Concerns

Cultural Systems Research, Inc. (CSRI), conducted a study to determine whether, and to what extent, the proposed use of the Eagle Mountain Mine for nonhazardous landfill would impact

cultural resources of concern to Native Americans whose traditional territory lies in this area. Their research showed that none of the Native American consultants identified the Eagle Mountains as sacred or having special significance to their people, though all were concerned about the potential impacts discussed elsewhere in this draft EIS/EIR. No impacts to Native American concerns were identified.

No impact on Native American values was demonstrated by CSRI's study, and no mitigation is recommended. Representatives and Elders of the Colorado River Indian Tribes (CRIT), however, were concerned about the effect that using the Eagle Mountain Mine as a landfill site might have on air quality, plants, and animals. The results of any studies of such impacts should be sent to CRIT and to all the tribal groups consulted in the study.

N. Paleontology

Assumptions and Assessment Guidelines. The sensitive paleontological resources identified on the project are nonrenewable scientific resources. For the following environmental analysis, impacts will be considered significant if the proposed action or project were to result in destruction of significant fossil deposits in these sensitive areas.

1. Proposed Action

a. Impact

At the mine/landfill site, proposed areas for fill, new structures, and lay-down and staging areas would be developed by grading and excavation, which could produce impacts to nonrenewable paleontologic resources in sedimentary rocks. Upgrading, realignment, and development of drainage structures along Eagle Mountain Road would also involve excavation. Annual maintenance with excavation equipment might impact nonrenewable paleontologic resources in sedimentary rock units. Because the potential for preserved resources in this area is quite low, however, this impact is not significant.

Any improvements to Eagle Mountain Road at the I-10 exit required by the Riverside County Transportation Department may impact paleontological resources. These consist of vertebrate fossils within stable sediments with developed soil horizons.

Rehabilitation of the railroad and required maintenance activities will include track straightening and alignment, ballast regulation, culvert cleanout and repair, vegetation control, and oiler maintenance in the areas identified as paleontologically sensitive by San Bernardino County Museum. Although potentially significant fossil-bearing deposits were identified along portions of the right-of-way, the proposed railroad rehabilitation activities will not involve excavations or movement of dirt. Therefore, impacts to paleontological resources are not expected in this area.

b. Mitigation

A program to mitigate potential impacts is proposed. The measures outlined below will be required for any major excavations in the areas associated with the I-10 and Eagle Mountain Road interchange.

1) Preparation of a paleontological monitoring program which will include paleontological personnel qualifications, monitoring and recovery methodology, and curation and report standards. The plan will be prepared by a paleontologist who meets the professional standards of the industry as is required by the County of Riverside Planning Department.

The plan will be approved and implemented by the County of Riverside. The plan shall also include a method for coordination of work stoppage by a County representative acting in the role of an authorized officer.

2) Preexcavation survey to recover paleontologic resources exposed in areas of proposed excavation.

3) Monitoring of excavation by qualified paleontologic monitors (as specified in the monitoring plan) to salvage resources as they are uncovered by excavation. This includes the recovery, removal, and processing of adequate samples of sediments containing small to microscopic vertebrate fossils. Monitors should be equipped to salvage fossils as they are unearthed, without unnecessary delays to excavation schedules. Monitors must be empowered to temporarily halt or divert construction equipment (in coordination with the County authorized officer) if necessary to remove large or abundant fossil specimens.

4) Preparation of fossils to a point of identification and stabilization. This includes wet screening of matrix containing fossils to recover small to microscopic vertebrate remains from sediments. Matrix must be removed from large specimens to reduce volumes during storage.

5) Identification of specimens, curation, and storage in an established repository with retrievable collections.

6) Preparation of a report of findings, including an itemized inventory of specimens accessioned into the museum's collections. The report will be completed within three months of the completion of grading in sensitive areas and will be submitted to the County of Riverside, BLM, and San Bernardino County Museum.

7) These conditions must be fulfilled to the satisfaction of the Riverside County Planning Director as part of the conditions placed on the Specific Plan. The San Bernardino County Museum (Robert Reynolds) is preferred by the County of Riverside to complete the monitoring, curation, and reporting program. This institution will serve as the repository for recovered fossil resources and can provide the necessary monitoring and recovery services. If an alternative paleontological contractor is to be used, prior approval must be received from the County Planning Director.

c. Significance After Mitigation

Activities associated with Eagle Mountain road improvements at the interchange with I-10 could result in significant impacts to nonrenewable paleontological resources. These impacts will be mitigated to levels below significance by implementation of a program which includes the measures listed above.

2. Reduced Landfill Operations Alternative

a. Impact

This alternative would result in the same impacts as the proposed action.

b. Mitigation

This alternative will need the same mitigation measures indicated for the proposed project.

c. Significance After Mitigation

The reduced landfill operations could also result in significant impacts to nonrenewable paleontological resources in the area of the Eagle Mountain Road and I-10 interchange. The impacts, however, will be mitigated to levels below significance by the recommended mitigation measures.

3. Rail Access Only Alternative

a. Impact

Because no improvements to Eagle Mountain Road in the vicinity of the I-10 interchange would occur under this alternative, no impacts would occur.

b. Mitigation

Because there would be no impact, no mitigation would be required.

c. Significance After Mitigation

There are no significant impacts associated with this alternative.

4. No Project Alternative

a. Impact

If development does not occur, the paleontological resources in the project area would not be subject to potential impacts.

b. Mitigation

No mitigation measures would be necessary if no impacts occur.

c. Significance After Mitigation

No impacts would occur under this alternative.

O. Energy Consumption/Generation

Portions of the proposed action and its alternatives would not result in any energy consumption/generation impacts. These portions include the land exchange, reverter clause, and railroad and road right-of-way grant. Therefore, only the landfill operations portion of the proposed action and its alternatives which has the potential for energy consumption and generation impacts is discussed below.

1. Energy Consumption and Generation

Assumptions and Assessment Guidelines. Refuse transportation, handling, and disposal require vehicles and equipment which require fossil fuel consumption. Generally, the farther the waste disposal site from the wasteshed, the greater the fuel consumption. The Eagle Mountain landfill project will require the hauling of refuse up to 200 miles from the landfill site. This energy cost is necessary because of the declining available landfills in the area where the waste is generated.

Though the scoping meetings revealed no concerns for energy, the California Environmental Quality Act requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The discussion in this section compares the energy consumption of "conventional" landfills in the areas of the refuse source with that of the proposed project and its additional energy use associated with transporting refuse outside the refuse source areas. If the overall energy consumption is determined to be wasteful, inefficient, and unnecessary, a significant, adverse energy impact will be determined.

a. Proposed Action

Impact

The proposed action would involve waste transfer, transport, and ultimate disposal at the Eagle Mountain landfill. The location, capacity, and operational details of the various transfer stations have not been determined at this time. Assessment of impacts attributed to the energy-intensive elements of the project are based on transporting 20,000 tpd (16,000 tpd by rail and 4,000 tpd by truck) of waste materials from refuse collection routes to a network of truck and rail transfer stations and then to the landfill. The truck transfer station would be located in either Riverside or San Bernardino County, approximately 75 miles from the landfill.

A summary of the types of equipment needed for transport, transfer, handling, and disposal of 16,000 tpd by rail and 4,000 tpd by truck of refuse at the Eagle Mountain landfill is shown in Table 50. Corresponding estimates of fuel consumption for these activities are shown on

TABLE 50
COMPARISON OF VEHICLES AND EQUIPMENT REQUIRED FOR TRANSPORT AND DISPOSAL OF PROPOSED PROJECT AND REDUCED OPERATIONS ALTERNATIVE

Vehicles	20,000 TPD	16,000 TPD
Transportation		
8-ton capacity packer trucks	2,500	2,000
25-ton capacity transfer/trailer rigs	160	80
22-ton capacity transfer/trailer rigs	486	425
Transfer Operations (Each Station)	5 Stations	4 Stations
200-hp rubber tired loaders	3 Stations	3 Stations
225-hp container handlers	2 Stations	2 Stations
225-hp train car spotter	1 Station	1 Station
Container Handling		
225-hp container handlers	2 @ ea. rail spur	2 @ ea. rail spur
300-hp container handlers	32	26
300-hp overhead cranes	4	3
225-hp container handlers	2	2
Landfill Disposal		
310-hp refuse compactors	12	10
335-hp crawler tractors	10	8
650-hp off-highway trucks	5	4
375-hp rubber tired loaders	2	2
335-hp crawler tractors	3	2
700-hp water trucks (12,000 gal.)	2	2
275-hp motor graders	2	2
400-hp pugmill	1	1
250-hp clump truck	1	1
140-hp crawler tractor	1	1
140-hp compactor	1	1
105-hp crawler tractor	1	1
90-hp backhoe	1	1
200-hp utility truck	1	1
222-hp grader	1	1

Tables 51 and 52. The information in these tables regarding estimates of daily fuel consumption can be summarized as follows:

Refuse transportation	22,800 gallons
Refuse handling and disposal	13,800 gallons
Total	36,600 gallons

The above total corresponds to 1.83 gallons of fuel consumed per ton of refuse disposed.

Implementation of the rail haul project will result in the additional consumption of approximately 20,000 gallons of diesel fuel per day over current "conventional" landfill disposal practices. The fuel consumption associated with the proposed action is primarily due to the proposed rail operations to the landfill site. However, the use of rail transport is more fuel efficient than using trucks to haul the waste approximately 75 miles to the landfill site. The use of one 20,000 tpd capacity landfill site as compared to four 5,000 tpd capacity landfill sites located in the Southland would reduce the duplication of vehicles and equipment.

The proposed rail haul project would use more than double (123 percent) the amount of diesel fuel than conventional landfill disposal practices.

As the solid waste deposited in the Eagle Mountain landfill decomposes, landfill gas will be generated. The LFG generated may contain over 50 percent methane by volume and, if recovered, may represent a potential fuel source. Although energy recovery plans have not been developed, it is anticipated that the LFG will be burned in reciprocating engines, gas turbines, or steam boilers, with subsequent conversion to electrical power. Such a conversion would require further agency approvals and environmental review.

It is estimated that the LFG recovery system could initially generate approximately 16 megawatts (MW) of peak electrical power at the onset of energy recovery operations. After 25 years of landfill operation (year 2017), the LFG recovery system could generate between 24 and 61 MW of peak electrical power. These estimates are based on the following assumptions:

1) LFG generation rates referenced above.

2) LFG as generated has a heating value of 450 Btu per standard cubic foot.

3) The conversion efficiency for electrical generating processes will be 30 percent.

Assuming a maximum initial electrical generation rate of 16 MW and an estimated 85 percent operation schedule, the LFG recovery system would produce approximately 326 million

TABLE 51
FUEL CONSUMPTION FROM REFUSE TRANSPORTATION OF 20,000 TPD

Project Phase	Vehicle Type	No. of Vehicles	Miles/day per Vehicle	Average Speed (MPH)	Diesel Fuel Use Miles/gal	Diesel Fuel Use Gal/day	Equivalent Energy Consumption (MMBtu/day)
Refuse delivery	Refuse packer*	1,250	40	25	8.0	6,250	806
Transfer station operations (rail)	Transfer truck/trailer§	24	450	25	5.0	2,160	279
Rail haul	Unit trains	6	300	N/A	N/A	10,425#	1,345
Transfer station operations (truck)	Transfer truck/trailer¶	80	300	50	6.0	4,000	516
TOTAL						22,835	2,946
Total Fuel Consumption, gallons/ton refuse						1.14	
Total Energy Consumption, Btu/ton refuse							147,265

*Transportation from collection route to transfer station. Excludes on-route fuel consumption.
§Transportation to rail spur from transfer station.
#Data on total daily fuel consumption for trains provided by Sierra Research.
¶Transportation to landfill from transfer station.

TABLE 52
FUEL CONSUMPTION FROM
REFUSE HANDLING AND DISPOSAL
OF 20,000 TPD

				Diesel Fuel Use			Equivalent Energy Consumption	
Project Phase	Vehicle Type	No. of Vehicles	Hours/day	Gal/veh-hr	Gal/hr	Gal/day	MMBtu/hr	MMBtu/day
Transfer station operations (rail)	Rubber-tired loader	18	20	6	108	2,160	13.93	139
	Container handler	20	20	6	120	2,400	15.48	155
	Train car spotter	2	5	7	14	70	1.81	9
	Transfer vehicle	8	20	5	40	800	5.16	103
	Container vehicla	2	20	6	12	240	1.55	31
Transfer station operations (truck)	Rubber-tired loader	3	19	11	18	627	2.32	46
Container handling yard	Container handling	32	10	7	224	2,240	28.89	289
	Overhead crane (electric)	4	11	0	0	0	3.61*	40*
	Container handler	2	10	6	12	120	1.55	15
Working face of landfill	Refuse compactor	12	10	16	192	1,920	24.76	248
	Crawler tractor	10	10	14	140	1,400	18.06	181
Application of daily cover	Off-highway truck	5	10	7	35	350	4.51	45
	Rubber-tired loader	2	10	11	22	220	2.84	28
	Crawler tractor	3	10	14	42	420	5.42	54
Dust control and road maintenance	12,000-gal tanker truck	2	11	19	38	418	5.16	57
	Motor grader	2	10	7	14	140	1.81	18
Liner construction	Pugmill	1	8	10.5	10.5	84	1.35	11
	10-wheel dump truck	1	8	6	6	48	0.77	6
	Crawler tractor	1	8	6	6	48	0.77	6
	Compactor	1	8	6	6	48	0.77	6

TABLE 52
FUEL CONSUMPTION FROM
REFUSE HANDLING AND DISPOSAL
OF 20,000 TPD
(continued)

Project Phase	Vehicle Type	No. of Vehicles	Hours/day	Diesel Fuel Use Gal/veh-hr	Gal/hr	Gal/day	Equivalent Energy Consumption MMBtu/hr	MMBtu/day
Miscellaneous	Crawler tractor	1	8	6	6	48	2.45	15
	Backhoe	1	2	3	3	6	0.39	1
	Utility truck	1	2	5	5	10	0.64	1
	Grader	1	2	5	5	10	0.64	1
TOTAL						13,797		1,505
Total Fuel Consumption, gallons/ton refuse						0.69		
Total Energy Consumption, Btu/ton refuse								75,250

NOTE: Excludes transportation by collection vehicles, transfer truck/trailers, or rail.

*Based on equivalent of 7 gallons/vehicle - hour fuel consumption.

megawatt-hours of electricity each day. In terms of electrical consumption and generation, the site would become a positive exporter of electrical energy after 7 to 14 years of operation. This is considered a positive long-term impact of the project.

As stated above, project implementation is expected to result in additional consumption of approximately 20,000 gallons of diesel fuel per day. This is equivalent to approximately 2,300 MMBtu, or 650 megawatt-hours of energy consumption each day. The LFG recovery and utilization system is not expected to produce an equivalent amount of energy until peak power production reaches 32 MW. Depending on LFG generation rates and other factors, the landfill will have been operating for 12 to 27 years before this power output is achieved (sometime between the years 2004 and 2017).

Power generation is expected to exceed the total equivalent energy consumption required for refuse collection, transfer, transport, and disposal at Eagle Mountain when plant output reaches 63 MW. This is expected to occur sometime between the years 2013 and 2055 (21 to 63 years after project implementation) and would result in a positive impact on energy consumption.

Mitigation

The project design includes measures to recover energy from landfill gas. Additionally, a preventative maintenance program and equipment electrification program similar to that of the proposed action should be implemented at transfer stations to maintain the operating efficiency of equipment and vehicles. All project equipment and vehicles would be serviced at intervals specified in the manufacturer's recommendations. Where feasible, fuel consumption will be reduced through the use of electrified equipment at the project site.

Significance After Mitigation

The mitigation measures, including components of the project design to recover energy from landfill gas, will lower the proposed action's energy impacts to below a level of significance.

b. Reduced Landfill Operations Alternative

Impact

The reduced landfill operations alternative would involve waste transfer, transport, and ultimate disposal at the Eagle Mountain landfill. The location, capacity, and operational details of the various transfer stations have not been determined at this time. Assessment of impacts attributed to the energy-intensive elements of this alternative are based on transporting a total of 16,000 tpd (14,000 tpd by rail and 2,000 tpd by truck) of waste materials from refuse collection routes to a network of truck and rail transfer stations and then to the landfill. The

truck transfer station would be located in either Riverside or San Bernardino County, approximately 75 miles from the landfill.

A summary of the types of equipment needed for transport, transfer, handling, and disposal of 14,000 tpd by rail and 2,000 tpd by truck of refuse at the Eagle Mountain landfill is shown on Table 50. Corresponding estimates of fuel consumption associated with the reduced landfill operations alternative for these activities are shown on Tables 53 and 54. The information in these tables regarding estimates of daily fuel consumption can be summarized as follows:

Refuse transportation	15,840 gallons
Refuse handling and disposal	11,850 gallons
Total	27,690 gallons

The above total corresponds to 1.39 gallons of fuel consumed per ton of refuse disposed for the reduced landfill operations alternative.

Implementation of this reduced rail haul project will result in additional consumption of approximately 11,300 gallons of diesel fuel per day over current conventional landfill disposal practices. As with the proposed action, the majority of fuel consumption from this alternative is primarily due to rail operations. However, the use of rail transport is substantially more fuel efficient than truck transportation. Also, the utilization of one 20,000 tpd capacity landfill site as compared to four 5,000 tpd capacity landfill sites would reduce the duplication of vehicles and equipment.

The reduced landfill operations alternative would represent an estimated 69 percent increase in fuel consumption over current conventional landfill disposal practices. This is a smaller increase than the proposed action's increase.

This alternative will decrease the inflow of refuse to 16,000 tpd and the capacity of the site by 20 percent. At the proposed inflow of 16,000 tons per day, this alternative will limit ultimate power production in energy recovery facilities and lengthen the time before the site would become an exporter of electrical power. The same energy-saving measures included in the proposed action would be incorporated in this alternative's project design.

Mitigation

Mitigation is the same as for the proposed action. No additional mitigation is required.

TABLE 53
FUEL CONSUMPTION FROM
REFUSE TRANSPORTATION
OF 16,000 TPD

Project Phase	Vehicle Type	No. of Vehicles	Miles/day per Vehicle	Average Speed (MPH)	Diesel Fuel Use		Equivalent Energy Consumption (MMBtu/day)
					Miles/gal	Gal/day	
Refuse delivery	Refuse packer*	1,000	40	25	8.0	5,000	645
Transfer station operations (rail)	Transfer truck/trailer§	21	450	25	5.0	1,890	244
Rail haul	Unit trains	4	300	N/A	N/A	6,950#	896
Transfer station operations (truck)	Transfer truck/trailer¶	40	300	50	6.0	2,000	258
TOTAL						15,840	2,043
Total Fuel Consumption, gallons/ton refuse						0.99	
Total Energy Consumption, Btu/ton refuse							127,692

*Transportation from collection route to transfer station. Excludes on-route fuel consumption.
§Transportation to rail spur from transfer station.
#Data on total daily fuel consumption for trains provided by Sierra Research.
¶Transportation to landfill from transfer station.

TABLE 54
FUEL CONSUMPTION FROM
REFUSE HANDLING AND DISPOSAL
OF 16,000 TPD

Project Phase	Vehicle Type	No. of Vehicles	Hours/day	Diesel Fuel Use Gal/veh-hr	Gal/hr	Gal/day	Equivalent Energy Consumption MMBtu/hr	MMBtu/day
Transfer station operations (rail)	Rubber-tired loader	12	10	6	72	720	9.29	93
	Container handler	16	10	6	96	960	12.38	124
	Train car spotter	2	5	7	14	70	1.81	9
Transfer station operations (truck)	Rubber-tired loader	2	20	6	12	240	1.55	31
Container handling yard	Container handling	26	10	7	182	1,820	23.47	235
	Overhead crane (electric)	3	11	7	21	231	2.71*	30*
	Container handler	2	10	6	12	120	1.55	15
Working face of landfill	Refuse compactor	10	10	16	160	1,600	20.64	206
	Crawler tractor	8	10	14	112	1,120	14.45	144
Application of daily cover	Off-highway truck	4	10	7	28	280	3.61	36
	Rubber-tired loader	2	10	11	22	220	2.84	28
	Crawler tractor	2	10	14	28	280	3.61	36
Dust control and road maintenance	12,000-gal tanker truck	2	11	20	40	440	5.16	57
	Motor grader	2	10	7	14	140	1.81	18
Liner construction	Pugmill	1	8	10.5	10.5	84	1.35	11
	10-wheel dump truck	1	8	6	6	48	0.77	6
	Crawler tractor	1	8	6	6	48	0.77	6
	Compactor	1	8	6	6	48	0.77	6

TABLE 54
FUEL CONSUMPTION FROM
REFUSE HANDLING AND DISPOSAL
OF 16,000 TPD
(continued)

Project Phase	Vehicle Type	No. of Vehicles	Hours/day	Diesel Fuel Use Gal/veh-hr	Gal/hr	Gal/day	Equivalent Energy Consumption MMBtu/hr	MMBtu/day
Miscellaneous	Crawler tractor	1	6	19	19	114	2.45	15
	Backhoe	1	2	3	3	6	0.39	1
	Utility truck	1	2	5	5	10	0.64	1
	Grader	1	2	5	5	10	0.64	1
Waste disposal of 4,000 tpd at local landfills (not Eagle Mountain)						3,240		400
TOTAL						11,849		1,509
Total Fuel Consumption, gallons/ton refuse						0.59		
Total Energy Consumption, Btu/ton refuse								75,450

NOTE: Excludes transportation by collection vehicles, transfer truck/trailers, or rail.

*Based on equivalent of 7 gallons/vehicle - hour fuel consumption.

Significance After Mitigation

Along with the eventual positive export of energy resulting from the conversion of landfill gas to electricity, the project design measures identified above will lower the energy impacts of this alternative to below a level of significance.

c. Proposed Action with Rail Access Only Alternative

Impact

This alternative would reduce inflow to 16,000 tons of waste per day by eliminating all truck access to the site. Truck transfer stations would not be required in conjunction with this alternative. Of the 20,000 gallon-per-day increase in fuel consumption estimated in conjunction with the proposed action over current conventional landfill practices, this alternative would result in an estimated savings of 4,000 gallons of diesel fuel per day by eliminating truck transportation to the landfill site from transfer stations (see Table 50).

The rail access only alternative represents an estimated 79 percent increase over current conventional landfill disposal practices. Energy recovery would be similar to the reduced landfill operations alternative.

Mitigation

The same energy-saving measures included in the proposed action would be incorporated in this alternative's project design.

Significance After Mitigation

Along with the eventual positive export of energy resulting from the conversion of landfill gas to electricity, these measures will lower the energy impacts of this alternative to below a level of significance.

d. No Action Alternative

Impact

This alternative will not result in impacts related to fuel consumption or energy recovery.

Mitigation

No mitigation is required.

Significance After Mitigation

There are no impacts related to this alternative other than the 16,400 gallons of diesel fuel required daily to use conventional landfills and no energy recovery. Beneficial energy impacts would occur at other landfills which implement energy recovery systems.

V. Cumulative Impacts

Under the National Environmental Policy Act regulations, cumulative impacts are defined as ". . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The California Environmental Quality Act Guidelines Section 15130 requires a discussion of cumulative impacts when they are significant. For such discussions, all past, present, and reasonably anticipated future projects producing related or cumulative impacts must be considered.

A. Cumulative Projects

1. Eagle Mountain and Vicinity

Within the townsite of Eagle Mountain, the most intense current activity is the return-to-custody facility, which houses approximately 271 inmates plus employees. The conditional use permit authorizing this activity was recently modified by Riverside County to allow an expansion up to 500 inmates. The elementary school in the Eagle Mountain Unified School District serves approximately 100 students using the buildings constructed for the high school, while the 30 high school students from the area attend school in Blythe. Remaining uses in the townsite include the Kaiser Steel Resources offices and a small number of residences. In the future, it may be expected that the community of Eagle Mountain will experience growth—both from the influx of employees and families caused by the landfill and RTCF and from general growth in the region. As part of the planning for this growth, a separate specific plan is being prepared for the townsite itself.

The most notable past project to occur in the area was Kaiser Steel's iron ore mine, which consisted of three open pits. The Black Eagle Pit, approximately two-thirds the area of the East Pit, is located in the Eagle Mountains about four miles from the proposed project. The Central Pit, approximately one-half the area of the East Pit, is located in the Eagle Mountains 1.5 to 2 miles from the project site. The East Pit occupies most of the proposed landfill site. All of these areas are highly disturbed, containing haul roads, coarse tailing and overburden piles, and some permanent structures. To some extent, the proposed action will restore the original contours of the Eagle Mountains in the East Pit area (see Figures 96 and 97). The Black Eagle and Central pits will remain unaltered by the project. These two sites are considered as alternatives to the proposed action but eliminated from detailed analysis in this draft EIS/EIR.

The design of the landfill project has established a sequence which would allow future mining activity during the next 60 or 70 years before landfill operations would cover this area. It is not possible to state exactly when or how mining activities might resume, but they would involve procedures somewhat similar to the iron ore mining which occurred on the property for many decades. Any such mining activities would require agency approvals and environmental review.

In addition to the land and facilities leased to MRC and outside of the Eagle Mountain townsite, Kaiser Steel Resources owns or has various mining claims on several thousand acres in the Eagle Mountains. Compared with the period prior to 1982, there has been little activity on this land. Some stockpiled aggregate materials have been sold and shipped from the property via truck, and mineral prospecting activities continue. This type of activity may be expected to continue.

Because of the unique resources and improvements associated with the land and project being considered, several other possible land uses and activities can be imagined, although these are more remote and speculative than the ones described above. The very large stockpiles of tailing material from prior mining may provide the opportunity for additional mineral recovery through chemical processes or specimen collection. No specific proposals for this type of activity are known at this time.

The availability of renewed rail service to Eagle Mountain may provide the opportunity for other uses which could benefit from the service, such as certain manufacturing uses involving bulk materials. Again, no specific proposals for this type of use have been identified. Likewise, recycling by the proposed project could cause future impacts.

The leased area controlled by MRC for the project extends outside of the currently proposed landfill specific plan boundaries. There are no plans to extend landfill activities or related uses to land outside of the landfill specific plan boundaries. The magnitude and lifetime of the project as currently proposed are such that any discussion of potential expansion 115 years from now would be too speculative for any analysis.

Finally, the Eagle Mountain Energy Company (EMEC), unrelated to and not supported by the Eagle Mountain landfill project applicants, has identified its interest in evaluating the possibility of using the East Pit area of the Eagle Mountain iron ore mine site for a hydroelectric pump storage project. EMEC has sought a preliminary permit from the Federal Energy Regulatory Commission (FERC), which, if granted, would establish a priority over other entities seeking a hydroelectric license for a three-year period. This permit does not establish a right to undertake such a project. Pursuant to the Federal Power Act and FERC regulations, EMEC would evaluate over a three-year period the feasibility of the concept, as well as its environmental impact and other factors as set forth in FERC regulations. A copy of the EMEC FERC application can be obtained at the Riverside County Planning Department.

In this concept, water would be pumped up approximately 1,000 feet from an existing lower reservoir to an existing higher reservoir in the East Pit during periods of low demand on the grid, which typically occur at night. During the day when electric demand is high, the stored water would be allowed to flow back down through a turbine generator producing electrical power which is used by the utility customers. The proposed project would be capable of providing 4,500 MW of peaking capacity to the Southern California Edison utility grid.

Any hydroelectric project such as that proposed by EMEC would require NEPA and CEQA review should it ever be proposed. The possibility of any hydroelectric project is considered speculative and remote and not reasonably foreseeable and is, therefore, not further evaluated in this cumulative impact section.

None of the activities mentioned above are authorized or permitted by the discretionary actions addressed in this draft EIS/EIR, but they would contribute to certain cumulative effects within the general project area.

2. Regional Area

Because the eastern parts of Riverside County are not well developed, a larger geographic area may be considered to identify projects which may have cumulative impacts. For purposes of this discussion, a region bounded on the west by Indio, California, and on the east by Blythe, California, was reviewed. Staff from the Riverside County Planning Department and the BLM Desert District office were consulted to identify specific projects or general patterns of land use activity which may have cumulative impacts within this region.

Within the county jurisdiction, residential development is occurring at a moderate pace in and around Blythe. This development is typified by a recently proposed specific plan in the Wiley Wells area, west of Blythe, and is promoted by the availability of jobs associated with the state prison and other activities in Blythe. In fact, some of the residences at Eagle Mountain are rented to people who work near Blythe but were unable to find housing in that area. Thus, continued residential development in and around Blythe may be anticipated. Projections for the desert subregion as a whole indicate that growth would occur at a rate of about 3.5 percent per year, which is relatively high compared to other areas of southern California. At this rate, the amount of urbanized land would approximately double in about 20 years.

Other activities within the county jurisdiction include a few use permits for aggregate mining, two of which are within this region south of Interstate 10. Currently, a Riverside County sanitary disposal site for solid waste exists west of Kaiser Road between Desert Center and Eagle Mountain and serves the communities of Eagle Mountain, Desert Center, and Lake Tamarisk. This landfill is expected to be closed by Riverside County after the proposed project is opened. The remaining land uses or conditions in the area include the development in and

around Desert Center, the agricultural uses generally northeast of Desert Center, and vacant open desert.

A variety of public utility developments or corridors occur within this region. These include the Colorado River Aqueduct operated by the Metropolitan Water District, several electrical transmission corridors operated by Southern California Edison, pipelines, and the highway corridors which generally run east-west across this portion of Riverside County. Other anticipated utility developments include a solar energy plant proposed at Ford Dry Lake, which is north of I-10; a second 500-kilovolt electrical transmission line approved between Devers and Palo Verde; a combined cycle power plant at Palo Verde proposed by San Diego Gas & Electric Company, and an approved gas pipeline for Southern California Edison. This list is probably not all-inclusive, but it does indicate the general pattern and variety of utility and service development across the desert region.

There are also recreational uses which occur in various places throughout the region, such as camping, hunting, and off-highway vehicle use.

On an even larger scale, the most significant cumulative impact is continued increases of air emissions in both the South Coast Air Basin and the Southeast Desert Air Basin. This effect is due to a combination of the size and expanse of the Southern California metropolitan area with its emphasis on automobile travel and of local climatic influences which trap and transport pollutants in the region. It is not possible to list all of the specific projects or activities which contribute to this impact.

B. Environmental Effects

The Eagle Mountain community is different from most southern California communities, for it supported a much larger population in the past than it presently contains. It is also owned and controlled by a single entity—Kaiser Steel Resources—so the provision of certain improvements and facilities can be accomplished without the need to coordinate among many landowners. The presence of structures, roads, and utility improvements provides the basis for a response to the demands for services that can be anticipated from future growth. The townsite specific plan that is being prepared will address these service needs in more detail.

Cumulative impacts of concern on a regional basis include those resources that are affected by regional growth. These resources are water quality and quantity, water consumption, traffic, air quality, land use, biological resources, growth inducement and socioeconomics, recreation and visual resources, utilities and services, noise, cultural resources, and energy consumption/generation. A discussion of the project-related cumulative effects on these resources follows.

1. Water Quality and Use

It has been determined that the potential impacts to groundwater quality from the proposed landfill will be mitigated through a variety of measures, enforced by the county and other agencies (Section IV.A.). Potential cumulative impacts arising from the proposed landfill and previous mining operations on groundwater quality are not considered a significant threat to groundwater quality. Disposal of mine process water in the tailing disposal areas could conceivably have affected groundwater in the Chuckwalla Valley; however, water quality data indicate that no significant change in water quality in the nearest wells (Chuckwalla and Eagle Mountain School wells) occurred during and following the years of mine operation. Figure 100 indicates in graphical form the changes in TDS and sulfate concentrations during this period. No discernible trend of change in water quality can be seen from this graph.

Other potential contributors to cumulative water quality impacts include the agricultural uses in the Chuckwalla basin, and the few low-intensity mining or aggregate extraction operations in the region. Several factors indicate that there are no cumulative water quality impacts resulting from these activities: there is little or no recharge into the aquifer from surface runoff; the only constituents of the groundwater which exceed drinking water standards (fluorine, and in some wells boron) are of natural origin; other major development projects noted above are in other basins; and, as noted above, the available data do not indicate a discernible trend in water quality that could be attributed to human activities. Thus, the addition of the landfill project is not expected to contribute to any cumulative water quality impacts in the area.

Regional consumption of the groundwater reserves is expected to remain in an overdraft condition for the reasonably foreseeable future. Thus, any additional water use would represent a cumulative impact on the region's water resources. Because the proposed water uses represent only eight percent of the region's total projected water consumption, the project would not contribute substantially to the region's overdraft condition. Therefore, the project's adverse cumulative impact to the region's water resources is not considered significant.

2. Public Health and Safety

The potential for public exposure to hazardous materials, fires, LFG, or other hazards associated with the project is limited to the project site and its immediate vicinity and the travel corridors used to transport material to the site. As discussed in Section IV.B. of this report, these potential health and safety impacts would be mitigated through design features, operating conditions, and other procedures which will be enforced as conditions on the landfill permit and specific plan to be approved by the County. Among the principal features important in this respect is the remote location of the project site, the remoteness of the private rail line to be used for a portion of the transport distance, and the choice of Eagle Mountain Road and its proposed private extension to reach the site. Each of these features serves to isolate the project operations

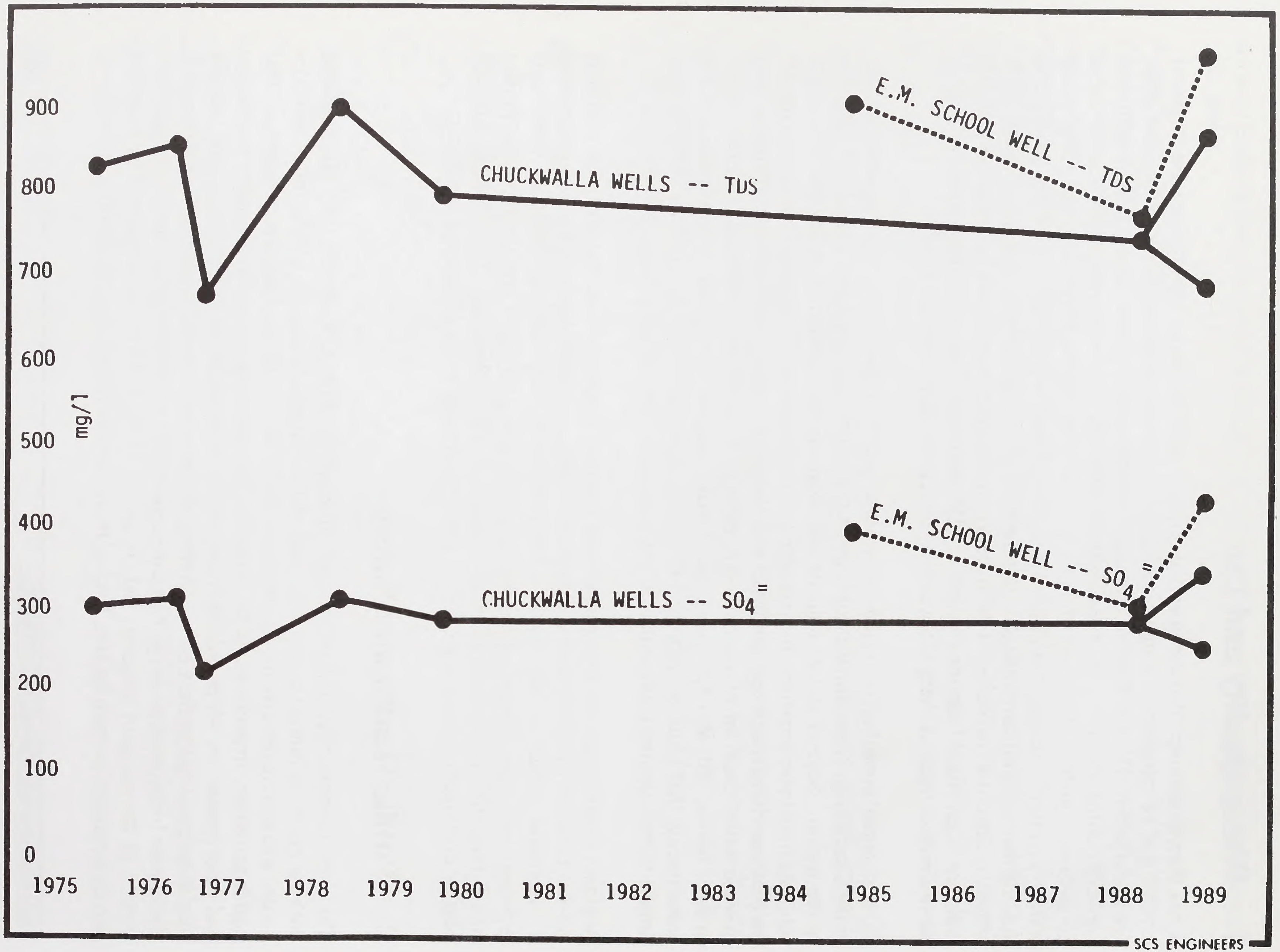

FIGURE 100. CHANGE IN CONCENTRATION OF TOTAL DISSOLVED SOLIDS (TDS) AND SULFATE ION WITH TIME AT CHUCKWALLA WELLS AND EAGLE MOUNTAIN SCHOOL WELL

SOURCE: SCS ENGINEERS, 1/90

from large concentrations of people, as well as from proximity to other uses which may increase cumulative hazards in the vicinity, thus resulting in no significant impact.

The Southern Pacific rail line and Interstate 10 do, of course, pass through more populated areas, such as Coachella Valley. Along these routes the project would cause a small increase in the potential for accidents. The increase in hazards would not be significant relative to that which already exists based on number of daily operations and types of materials transported under existing conditions. Current federal and state regulations provide controls on materials transport to protect public health and safety, and the proposed action would not alter the effectiveness of these controls.

3. Traffic and Transportation

Besides the landfill project, the most likely future traffic generator which would affect local roadways would be export of stockpiled aggregate from the Kaiser Steel Resources properties. Over the past few years, aggregate shipments have amounted to about 10,000 tons per year. This is a fairly small volume and would average fewer than ten truck trips per day. As discussed in the Traffic sections of this draft EIS/EIR (Section III.C. and IV.C.), all of the roadways and intersections in the project vicinity currently function at a Level of Service A and are projected to continue at this LOS for the foreseeable culture. The addition of a few more truck trips per day would not have a significant effect on local roadways. In the event a much more extensive program of aggregate processing and shipment occurs, additional traffic study may be warranted. The implementation of an aggregate processing project would require separate permits from the County of Riverside, which would include a review of traffic effects as part of its environmental review.

Recycling could be accomplished using the return rail trip and thus would not add to a traffic impact. Increased traffic from the general growth within the townsite of Eagle Mountain was considered in the traffic analysis performed for this report by projecting traffic volumes into the future based on regional growth through 1995 and then analyzing the effects of the Eagle Mountain landfill project. Beyond 1995, the traffic analysis recognized that it would take approximately 40 years for roadway volumes to double and that this level of traffic would still be easily accommodated on the local roadway network (see Appendix D, page 39). Attempting to assess cumulative traffic impacts beyond this time would be quite speculative.

In the larger desert region, traffic volumes on Interstate 10, other highways, and local streets will increase as the overall population and extent of human activities increase. Of the major projects identified above, only the residential development around Blythe would be a notable traffic generator. The other developments—transmission lines and other utility projects—would generate traffic during their construction which may cause short-term impacts at specific sites. The cumulative effect of these projects and the proposed landfill would not be significant,

however, due the fact that utility projects are not major traffic generators and that the projects are separated by many miles.

4. Air Quality

Increased development and population growth within the townsite of Eagle Mountain will lead to small additional air emissions from automobile traffic. A more significant increment in future air pollution may be associated with future aggregate processing or mining activity. Both of these activities have the potential to generate particulate emissions from specific processing equipment and from fugitive dust sources. Mining equipment driven by internal combustion engines would also increase nitrogen oxide emissions and other pollutants of concern. At the time any of these activities are proposed, additional analysis will be performed and specific permit requirements will be established. The baseline monitoring and visibility monitoring incorporated in the Eagle Mountain landfill project will provide data to allow a more accurate analysis and prediction of the cumulative effects of the future activities. These future reviews would help reduce local air quality impacts. However, given the current levels, air impacts would probably be significant.

The regional cumulative air pollution impacts, which are significant, are addressed in the South Coast Air Quality Management Plan (1989), which can be reviewed at the County of Riverside planning offices. If fully implemented and successful, the South Coast Air Quality Management Plan would lead to consistency with the national ambient air quality standards by the year 2007.

5. Land Use

This proposal is not in serious conflict with any general goals, standards, or policies of the General Plan. The project would be potentially consistent with the Desert and Mountainous Areas designation which surrounds the East Pit area, as well as the Category IV designation of the townsite area. Actual consistency determinations need to be made by the County after their review of the project and its compliance with the general environmental goals stated in the General Plan. This determination is part of the General Plan amendment and other actions necessary to approve the project. Because of the low level of development taking place in eastern Riverside County, the removal of open space is not a regionwide concern and is not considered a significant cumulative land use impact.

The use of remote desert sites for waste disposal is also being proposed in several areas of the Mojave Desert (i.e., Class I near Hector, Class I near Ludlow, Class III near Amboy, and low-level radioactive near Ward Valley). The use of the desert areas to dispose of urban area waste is a potential cumulative land use impact. However, given the distance between the proposed project and those listed above, the relatively small percentage of desert land used for

the combined projects and the pressing need for landfill space, this land use impact is not significant.

The historical patterns of land use in the desert region have been influenced strongly by the east-west travel corridors. The continuing development of utility installations and growth of small communities which serve the travel corridors is consistent with this general pattern. The landfill project itself is not influenced by this pattern since its location was determined by the presence of past mining activity. Transport to and from the project, however, will use rail and highway corridors that are well established. None of the projects considered in the larger desert region would have a marked influence on the overall pattern of land uses, and no significant cumulative impacts are anticipated.

6. Biological Resources

Cumulative effects on biological resources are caused by land development, intensive land uses, off-highway vehicle activity, and other events which reduce habitat and have adverse effects. At the same time, however, resource management efforts and larger plans are under way to improve habitats and have beneficial effects. The combination of effective resource management plans that avoid impacts to biological resources of concern with specific mitigation measures to compensate for unavoidable impacts to resources from specific projects will ensure mitigation of cumulative biological impacts.

In the immediate vicinity of the project, several site-specific concerns must be addressed in and around the Eagle Mountain townsite as it develops. These include the presence of an isolated area of desert tortoise habitat and the presence of several sensitive plant species. A separate specific plan is being proposed for the Eagle Mountain townsite, and the environmental documentation for that plan must address these issues. Mitigation measures similar to those proposed for the landfill project—preservation of certain habitat areas and other measures to enhance local habitat values—will be necessary for the townsite specific plan.

On a more regional scale, most of the typical utility developments impact relatively small areas of land and do not contribute major increments to the cumulative loss of habitat. Of more importance are the gradual loss of native habitat as agricultural and residential uses increase and the increasing use of the desert areas for recreation. These activities have resulted in a cumulative loss of habitat which has contributed to the listing of several desert species as threatened or endangered. In response to these cumulative effects, several wildlife management plans including habitat conservation plans (HCPs) are in place or are being developed by state and federal agencies. An HCP determines a species' habitat requirements, its susceptibilities to the impacts of urban development, and the conservation measures necessary to ensure its survival. An HCP for the desert tortoise has been prepared for Clark County, Nevada. Another HCP is being discussed for the Mojave desert tortoise in eastern Riverside County and adjoining lands in Arizona. The Multiple Species Habitat Conservation Plan (MSHCP)

attempts to identify and protect ecosystems which sustain biodiversity in Riverside County and maintain the viability of threatened, endangered, and candidate species. The draft report was submitted to the County in January 1991. All of these plans are available at state and federal agencies. The net effect of these plans, in conjunction with project-specific mitigation measures, should reverse the trend of cumulative habitat losses caused by man's activities.

Likewise, any project which might impact endangered or threatened species will have to comply with mitigation measures required by the USFWS and/or CDFG.

The proposed Eagle Mountain landfill project will have cumulative effects on two plant species of concern, Alverson's foxtail cactus and California barrel cactus. These impacts are not considered significant. The loss of substantial populations of these two species of cactus at the proposed landfill site contributes to the body of information that could lead to the possible federal listing of Alverson's foxtail cactus and the reevaluation of the candidacy of California barrel cactus. The status of the current populations of these species, their distribution, and their potential for listing is contained in the appropriate edition of the *Federal Register*.

Loss of desert tortoise habitat due to project development is minor and would not significantly add to the cumulative loss of habitat in the region. However, cumulative impacts to the desert tortoise could be significant due to population fragmentation. Reactivation of the Eagle Mountain rail line and the introduction of 400 truck trips per day on Eagle Mountain Road could cause a significant cumulative impact to tortoise populations in the region. The rail and road system would act as barriers to tortoise movements and cause subpopulations to become isolated to the point where a random natural occurrence (e.g., disease, drought, fire) could cause the extinction of one or more of these subpopulations. The tortoise population in the region has already been fragmented somewhat because of I-10 and the Coachella canal. Barrier-culvert systems under the railroad tracks and Eagle Mountain Road would allow for genetic interchange between tortoise subpopulations and allow recolonization of areas where tortoise subpopulations have died out due to random natural factors. A system of barriers along portions of the railroad right-of-way and Eagle Mountain Road, to prevent road/train kills, tied into a series of under-road/track culverts is proposed as mitigation for the Eagle Mountain landfill project (see Appendix F).

A potential increase in the regional raven population could occur as result of the establishment and operation of the Eagle Mountain landfill project. Ravens are known to prey upon juvenile tortoises and have the potential to impact the tortoise populations at both the local and regional level. Increased depredation of tortoises would be a significant cumulative impact. The project proponents propose to initiate a long-term raven monitoring program to detect any increases in the raven population in the vicinity of the landfill. If a significant increase in raven numbers is detected once landfill operations begin, then an active raven control program will be initiated, in accordance with BLM and USFWS direction, to control ravens. Implementation of the barrier/culvert system discussed previously, the proposed tortoise population monitoring

program, and a raven monitoring and control program would reduce any significant cumulative impacts to the desert tortoise to a level below significance. In addition, the BLM has a raven management plan (draft 1990) which will address cumulative impacts caused by ravens.

7. Growth Inducement and Socioeconomics

A discussion of the potential for the proposed action to be growth-inducing is discussed in Section IV.H. of this report. The growth-inducing impacts are found to be positive and considered insignificant because much of the service capability required by the increased population is already available. The primary regional impact will be the increase in the costs associated with solid waste disposal; however, as is discussed in Section IV.H. of this report, this increase is not considered significant.

8. Visual, Recreation, and Wilderness Resources

As discussed in Section IV.J. of this draft EIS/EIR, the visual contrast of the completed landfill will be noticeable from some key observation points and will attract attention and dominate the characteristic landscape from nearby viewpoints. The net result of the project, however, will be a reduction in the visual contrast level from strong to moderate. In this sense, the project will have less visual impact on recreation areas than the existing conditions. This effect of the proposed landfill project is probably unique among large projects in remote areas.

Although no other projects in the region of the scale of the proposed landfill are being considered, the continued growth in the desert communities and continued expansion of utility and transportation facilities leads to a cumulative change in the visual character of the desert areas. As noted above in the Land Use discussion, this change is occurring primarily in the major transportation and utility corridors. While the landfill project itself is distant from the Interstate 10 corridor, it would contribute indirectly to the cumulative increase in human activities by the rail and truck transportation associated with it.

The increased recreational activities of the growing desert population will most likely have an impact on recreation resources over time. Increased activities such as off-highway vehicle use and camping on public lands often result in disturbances to wildlife and vegetation. However, these disturbances are not considered significant for this area based on past, present, and foreseeable use levels.

The landfill construction and operations, BLM/Kaiser Steel Resources, Inc., land exchange, Eagle Mountain rail line and Eagle Mountain Road Extension right-of-way grants, and Riverside County Plan Amendment will have no direct impact on wilderness resources. The project area and immediately adjacent lands were excluded from wilderness consideration due to the extensive open pit mine operations associated with the Eagle Mountain iron ore mine.

There will be no reduction in size of designated Wilderness Study Areas, nor will there be any immediate physical effects or surface disturbance to these areas.

Indirect visual impacts on wilderness resources will be limited to views of the project area from certain vantage points within the Eagle Mountain WSA. However, it is important to note that the area will not change from pristine to less pristine, but rather from severely degraded to reclaimed. The impacts are capable of being reclaimed and the reclamation will, to the extent practicable, be done while the landfill activities are in progress. Topographic contouring, replacement of topsoil, and reseeding of plant cover will be done to meet the goal of restoring the disturbed surface to the point that natural succession will occur. These and other mitigation measures included in the project design will eliminate or reduce these indirect impacts on wilderness to levels considered insignificant.

Additionally, the potential for visually impacting the surrounding area by night lighting is significant. Implementation of the mitigation measures will lower potential night lighting impacts to a level of insignificance. On a more regional scale, however, higher levels of night lighting are expected as growth occurs near Blythe and in the other desert communities. While increased night lighting may not be considered a significant regional impact, it would nevertheless alter the overall character of the desert and have a negative effect on the aesthetic enjoyment of wilderness areas.

9. Utilities and Services

The only major utility or service which may be subject to major cumulative impacts is water. Most of the water used in the region around the project is from local wells. The historical data indicate that the water table has been lowered by removal of water for the old mining operations and the continuing agricultural and residential uses in the vicinity. Under the present system, all drinking water for the community of Eagle Mountain is trucked in from outside. As the community grows, provision of water service in this manner may become less feasible. At some point in time, it may be more economical to install water treatment works to make the well water meet potable standards. This particular service question will have to be addressed at a later time in the specific plan for the Eagle Mountain townsite.

Total usable water reserves in the northeastern portion of the Chuckwalla Valley were estimated by Mann (1986) to be approximately one million acre-feet, assuming 100 feet of saturated sediments and a specific yield of 15 percent. This estimate is likely conservative considering the fact that 200 or more feet of saturated sediments underlie the central portion of the Chuckwalla Valley. The U.S.G.S. estimated that the usable water reserves total 6 million acre-feet. The water consumption of the landfill and the Eagle Mountain townsite, when combined with existing uses, will not result in a significant cumulative impact.

Other services are generally available in the area, although certain services are provided only at a very low level, in keeping with the rural nature of the region.

10. Noise

As discussed in Section IV.L. of this draft EIS/EIR, concern has been expressed that sounds emitting from the proposed Eagle Mountain rail system would adversely affect the Coachella Valley fringe-toed lizard. A laboratory study investigating the effect of off-highway vehicle sounds on the auditory response of the fringe-toed lizard concluded that sound levels greater than 95 dBA of cumulative durations greater than 500 seconds result in hearing loss. This threshold (95 dBA) is used as the basis for the analysis of the acoustic impacts from the increased railroad noise onto the fringe-toed lizard habitat. It is concluded that since the daily increase in noise levels from train operations along the Whitewater preserve (for the fringe-toed lizard) segment of the Southern Pacific line does not exceed 74.7 dBA, this effect is not considered a significant impact.

Also, the increased rail operations will not represent a significant cumulative impact to the fringe-toed lizard because there are no known noise sources other than the rail line in the Whitewater preserve and the maximum train pass-by noise level measured at a distance of 50 feet was 79 dBA $L_{eq}(10)$, as shown in Table 5 of the noise appendix (H).

There is the potential for cumulative short-term noise impacts to occur during the renovation of the Eagle Mountain townsite. Figure 99 shows the 75 dBA L_{max} noise contour for the landfill operations including the pug mill and container handling yards. If a noise point source occurs in the landfill area near the landfill border and in the townsite near the border concurrently, a cumulative noise impact could occur. This impact is short-term and would be addressed in the townsite specific plan currently being prepared. This is not considered a significant impact.

11. Cultural Resources

As previously discussed in this document, cultural resources are a nonrenewable, finite resource. Destruction of this significant resource is not only a regional but also a national concern. The National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) regulations, "Protection of Historic Properties" (36 CFR 800) "require Federal agencies to identify historic properties which may be affected by an undertaking, gather sufficient information to evaluate the eligibility of the properties for the National Register, and afford the ACHP the opportunity to comment." The County of Riverside also requires that cultural resources be addressed and that impacts to these resources be mitigated in projects requiring County approval. These measures serve to reduce the project-specific and cumulative impacts to cultural resources from major projects. Vandalism and other illegal activities

continue to affect adversely cultural resources. The only way to reduce this impact is through greatly increased law enforcement activity and educational programs in our primary and secondary schools emphasizing the need for preservation of our cultural resources in the desert regions.

One site, identified during the archival research, was recorded within the railroad right-of-way. No remains of this site were found within the right-of-way. It is possible that this site remains outside of the project area; however, there will be no effect on this site as a result of the proposed project.

One site (Riv-3798) was located adjacent to the railroad. The center of this site has been removed during construction of the railroad, and there are no cultural materials remaining within the area of potential effect. Therefore, there will be no effect on this site as a result of the proposed project.

Nine isolates were identified within the land exchange portion of the proposed project. Under 43 CFR 8111.0-6 (e), isolated artifacts are recorded but are not evaluated as cultural properties; that is, they are not subject to Section 106 consultation. As a result, there will be no cumulative impacts to these cultural resources. Under CEQA, isolates are evaluated for significance and, if found not significant, so recorded. The nine isolates were not identified as significant and no cumulative impacts are anticipated.

12. Energy Consumption/Generation

It is possible that LFG generated by the project will be used on-site and/or be exported from the site to relieve energy requirements in the region. During the early years of the landfill operation, little LFG would be generated; however, after 100 years of operation, up to 80 million cubic feet could be generated in a day. Within the next 100 years, there will be significant technological changes, however, including the methods by which wastes are generated, collected, recycled, and ultimately disposed. The quantities and types of materials requiring landfill disposal and, hence, the amount of LFG generated are subject to change pending future technological advancements and environmental, economic, and political considerations.

For the larger desert region, many of the anticipated development projects are related to generating or providing energy. These include new power plants, fossil fuel pipelines, and electrical transmission lines. While the distances across the desert amount to an obstacle to be overcome in transmitting energy, the remoteness of the desert and the regular availability of sunlight and wind allow it to contribute to the greater energy supply of the region. Thus, the cumulative effect of activities in the desert region relative to energy consumption are not considered significant.

VI. The Relationship Between Local Short-term Uses of Man's Environment and the Maintenance and Enhancement of Long-term Productivity

The size and lifetime of the proposed Eagle Mountain landfill are larger than most modern projects. Over 2,000 acres would be directly affected by the project, and several thousand more are either within the leasehold of MRC or in the adjacent community of Eagle Mountain, which would be indirectly affected. The estimated active lifetime for the landfill is 100 years, perhaps twice as long as most other landfills or similar public works projects. After formal closure of the landfill, maintenance and monitoring activities would continue for several additional decades. Given these factors, the characterization of the project as a short-term use may seem surprising. When measured by human terms, the project would outlast most foreseeable activities, regulations, developments, and land uses. Relative to certain components of the natural environment, however, the project is indeed short term.

The three most important topic areas in which the potential long-term effects of the project are most critical are water quality, biology, and public health and safety.

Groundwater in the Chuckwalla basin is, for all intents and purposes, basically a nonrenewable resource. There is little or no recharge from surface waters and no foreseeable proposals for artificial recharge on any large scale. While the water quality is not particularly good, the groundwater is used for irrigation and as a potable source by some people. The project design has many features and conditions to avoid groundwater contamination, but if it were to pollute the groundwater in the Chuckwalla basin, the impact would be one of very long-term significance. This is because the effect would probably not be noticeable at existing wells for many years, and by the time it was noticed, the contamination would affect such a large volume of groundwater that remediation of the problem would be extremely difficult.

Current problems with groundwater pollution in other areas invariably arise from activities which occurred many years ago and are just now becoming apparent. Modern regulations—those promulgated within the last decade—recognize the inherent difficulty of protecting groundwater quality or restoring it once contamination has occurred. The project includes design measures and conditions which reflect the modern understanding of the importance of protecting groundwater. The low permeability liner leachate collection and treatment system, required monitoring wells, and regulatory oversight are all measures which serve to reduce the potential for groundwater contamination to an insignificant level. Two other factors not imposed by regulations also reduce the potential impact: the processing of virtually all the municipal waste for the project through transfer stations and compactors will remove much of

VII. Significant Irreversible Environmental Changes

For most landfill or other land development projects, the most significant irreversible commitment necessary is the land itself on which the project is located. For the Eagle Mountain landfill, however, the land in question has already been subject to very severe disturbance through past mining activities. Its commitment to the project does not represent a major loss of land usable for other purposes or usable as biological habitat. In a sense, the irreversible change in the land has already occurred, and the project involves a beneficial use and restoration of the disturbed land.

The materials and energy necessary to implement the project will be irreversibly committed. The material commitment is not significant—it involves refuse and includes a major reuse of spoil material on-site as part of the project. The energy consumption of the project is high; but the energy consumption of all project alternatives is also high. As conventional landfills in the metropolitan areas become full, more energy will be necessary to transport refuse to more distant landfills whether they are conventional landfills at intermediate distances or desert landfills at remote distances. The Eagle Mountain project has several factors which reduce its net energy consumption relative to other potential disposal options—it emphasizes rail transport, it starts with a large pit and available cover material, and because of its size, it may have the potential to recover a significant amount of energy through the combustion of landfill gas in the future. Thus, the materials and energy commitments of the project are not considered significant.

There is the potential for covering mineral resources in the project area with the landfill. This would represent a commitment of these resources to non use, except that the phasing of the project permits the removal of these resources in the future. Economics and need will determine when and if these resources will be recovered. Given the time remaining to remove the majority of these mineral resources (i.e., 75 years), this is not seen as a significant irreversible change.

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X. Glossary of Terms and Acronyms

AB: Assembly Bill

ACEC: Area of Critical Environmental Concern

ACHP: Advisory Council on Historic Preservation

Acre-foot: Volume of liquid or solid required to cover one acre to a depth of one foot.

Active fault: Fault with recent enough seismic activity as to have displaced materials not more than 12,000 years old.

Alluvium: A general term for deposits made by streams, river beds, or floodplains. A deposit of silt or silty clay laid down during time of flood.

Ambient noise: A mix of all the existing sounds within a given location; i.e., background noise.

ANDOS: Areas Not Designated as Open Space

Aquifer: A geological formation that is sufficiently permeable to conduct groundwater and to yield significant quantities of water to wells and springs.

ARB: Air Resources Board (State of California)

Area of Critical Environmental Concern (ACEC): Area where special management is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes.

Artificial fill: Human-made deposits of soil, rock, tailings, and the like.

Authority to Construct: Written permit pursuant to Rule 201, Regulation II, of the South Coast Air Quality Management District which must be obtained from the Air Pollution Control District prior to the construction, alteration, or replacement of any article, machine, or equipment which may emit air contaminants or affect in any way the emission of those contaminants.

BACT: Best available control technology

Baseline groundwater monitoring: Measure of groundwater quality prior to initiating a project for the purpose of having a standard for future comparisons.

Bedrock: The solid rock that underlies other superficial material.

Biological oxygen demand (BOD): A measure of wastewater strength. The amount of oxygen required by bacteria to decompose organic matter in a water sample under aerobic conditions at 20 degrees Centigrade over a five-day incubation period.

British thermal unit (Btu): A measure of energy. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at a specified temperature.

BLM: Bureau of Land Management

B.P.: Before the present

Caliche: Gravel, sand, or desert debris cemented by porous calcium carbonate.

California Desert Conservation Area (CDCA) Plan: BLM program pursuant to the FLPMA of 1976 (Section 601) which provides for the proper use of desert public lands and resources while safeguarding the environmental, cultural, and aesthetic values.

CCR: California Code of Regulations

California Endangered Species Act: 1984 legislation which intends to protect floral and faunal species by listing them as "rare," "threatened," "endangered," or "candidate" and providing a consultation process for the determination and resolution of potential adverse impact to the species.

California Environmental Quality Act (CEQA): Policies enacted in 1970, and subsequently amended, the intent of which is the maintenance of a quality environment for the people of California now and in the future.

Category IV Outlying Area: Area characterized as "self-sufficient" in terms of public services, with basic road improvements, low residential densities, limited convenience commercial services, and potential for resource production and waste disposal as considered appropriate.

CCR: California Code of Regulations

CDFG: California Department of Fish and Game

Cenozoic era: Geologic time span comprising both the Tertiary and the Quaternary periods (65 million years ago to the present).

CFR: Code of Federal Regulations

Chemical oxygen demand (COD): The amount of oxygen required for the oxidation of the organic matter in a water sample. An indication of the quantity of organic matter present in the sample.

CIWMB: California Integrated Waste Management Board

Class I area: National park, national wilderness area, or national monument which meets one or more clean air standards and which must be protected against significant deterioration caused by pollutants.

Class III landfill: Facility which allows only the disposal of "nonhazardous municipal solid waste and construction debris waste."

cm/sec: centimeters per second

CNEL: Community Noise Equivalent Level

CO: Carbon monoxide

COD: Chemical oxygen demand

CoSWMP: County Solid Waste Management Plan

County Services Area (CSA) 51: Area in eastern Riverside County near the project location which includes the towns of Eagle Mountain, Desert Center, and Lake Tamarisk. These communities receive monies from the County general fund to pay for roads, water, and sewer.

Cretaceous period: Geologic time approximately 135 million years ago (compare Mesozoic era).

CRIT: Colorado River Indian Tribes

Crystalline rock: A rock consisting of minerals in an obvious crystalline state. Inexact synonym for "igneous and metamorphic rock" as opposed to "sedimentary."

cu ft/lb-yr: Cubic feet per pound per year

dBA: A-weighted decibel; decibel weighted to reflect sounds most sensitive to human ears.

Desert Area: Designation under the Land Use Determination System which allows for open space and limited recreational uses, single-family residences (one dwelling unit per lot), landfills, compatible resource development, and governmental uses in lots of 10 acres in size.

Discretionary actions: Conditions which can be imposed on a project action prior to approval for implementation. The approval would thus be "at the discretion" of an agency.

DOI: Department of the Interior (United States)

EIR: Environmental impact report

EIS: Environmental impact statement

EMEC: Eagle Mountain Energy Company

EMT: Emergency medical technician

Endangered species: A species with its prospects of survival and reproduction in immediate jeopardy from one or more causes.

Environmental impact report (EIR): Document in which the impacts of any state or local, public or private project action which may have a significant environmental effect are evaluated prior to its construction or implementation, as required by the California Environmental Quality Act.

Environmental impact statement (EIS): Document prepared to evaluate the environmental effects of a project which requires federal review under the National Environmental Policy Act.

Eocene epoch: Geologic time within the Tertiary period corresponding to approximately 55 million years ago.

EPA: Environmental Protection Agency

Extrusive rock: Igneous rock that has erupted onto the surface of the earth.

Federal Drinking Water Standards: Primary water standards. Criteria set in 1962 by the U.S. Public Health Service which is used in determining the suitability of a water for drinking and culinary purposes. The standards establish mandatory limits of maximum permissible concentration for certain chemical constituents and nonmandatory but recommended limits for others.

Fault: A fracture or fracture zone along which there has been displacement of the sides relative to one another.

FERC: Federal Energy Regulatory Commission

FHWA: Federal Highway Administration

FLPMA: Federal Land Policy and Management Act

Fluviatile sediments: Sediments produced by river action.

Fossil fuel: Petroleum, natural gas, or coal. A general term for any hydrocarbon that may be used as fuel.

Green waste compost: A mixture of decaying organic solid waste matter used as fertilizer.

Groundwater basin: Underground formation with sides and bottom of relatively impervious material in which groundwater is held or retained. Aquifer or system of aquifers with well-defined boundaries.

Groundwater gradient: The slope of the profile of the water table under unconfined groundwater conditions, or the slope of the imaginary surface to which groundwater rises due to hydrostatic pressure under confined conditions (wells and springs).

HDPE: High density polyethylene

HMA: Habitat Management Area.

Habitat area categories: System used to indicate level of importance for wildlife habitat management considerations; Category 1 designates the most important areas and Category 3 the least.

Hazard index: A measure of how hazardous a railroad crossing is relative to others, rather than an absolute measure of risk.

Hazardous material: Substance which, because of its potential for either corrosivity, toxicity, ignitability, chemical reactivity, or explosiveness, may cause injury to persons or damage to property.

HCP: Habitat conservation plan

Holocene, or Recent, epoch: Geologic time within the Quaternary period from approximately 12,000 years ago to the present time.

Igneous rock: Rock that resulted from the solidification of molten or partly molten material.

Intrusive rock: Rock which has been injected into the earth under pressure.

JTNM: Joshua Tree National Monument

KOP: Key observation point

Lacustrine sediments: Sediments produced by lake action.

Landfill condensate: Liquid from the landfill gas which results from the temperature decline the gas goes through during collection.

Landfill cover: Low-permeability compacted soil placed over completed sections of a landfill to minimize percolation of surface waters through the refuse and to prevent scavenging.

Landfill gas (LFG): Gas produced as part of the biological decomposition of the organic matter present in solid wastes; methane is the principal component of this gas.

Landfill leachate: Liquid resulting from the contact of water with the decomposing waste of a landfill and which now contains dissolved waste materials.

Landfill liner: Layer of low-permeability soil (clay) applied to the bottom of the landfill to direct leachate to the leachate collection system and minimize leakage in cases of leachate production.

Land Use Determination System: A four-step process established by the Riverside County Comprehensive General Plan for the identification of the appropriate land uses depending on the location of a particular site.

LEA: Local Enforcement Agency

Local Enforcement Agency (LEA): The Riverside County Department of Health is the LEA acting for the California Integrated Waste Management Board. It will issue the County solid waste facilities permit.

L_{eq}: Equivalent noise level

Level of Service (LOS): An indicator of traffic conditions at an intersection or on a stretch of roadway, and of the delay that can be expected in the general area; A is the best (no delay) and F is the worst.

LFG: Landfill gas

L50: Noise level exceeded 50 percent of the time

L_{max}: Maximum noise level

LOS: Level of Service

Magma: Naturally occurring molten rock material.

Mesozoic era: Geologic time span comprising the Triassic, Jurassic, and Cretaceous periods (230 to 135 million years ago).

Metamorphic rock: Any rock derived from preexisting rocks in response to marked changes in temperature, pressure, stress, etc.

mg/kg: milligrams per kilogram

mg/l: milligrams per liter

Mineral Resources Area: Designation under the Land Use Determination System which allows for mineral production and compatible and related uses with a minimum lot size of 20 acres.

Mining reclamation plan: Restoration effort whereby equipment, homes, offices, and other structures are removed from the quarrying site and improvements are effected to stabilize surfaces and allow natural revegetation to occur.

Miocene epoch: Geologic time within the Tertiary period corresponding to approximately 20 million years ago.

MMBtu: Million British thermal units

mmcfd: Million cubic feet per day

MOU: Memorandum of Understanding

Mountainous Area: Designation under the Land Use Determination System which identifies an area with slopes in excess of 25 percent, with no county road access or community water system, and which allows for open space and limited recreational uses, single-family residences (one dwelling unit per lot), landfills, compatible resource development, and governmental uses in lots of 10 acres in size.

MPH: Miles per hour

MRC: Mine Reclamation Corporation

MRF: Materials recovery facilities

MSHA: Mine Safety and Health Act

MSHCP: Multiple Species Habitat Conservation Plan

MSL: Mean sea level

Multiple Use Class C (Controlled Use): CDCA Plan designation for an area where grazing, vehicle access, and most types of facility development are restricted.

Multiple Use Class I (Intensive Use): CDCA Plan designation for an area which allows for the concentrated use of lands and resources for human needs, but with reasonable protection for sensitive natural and cultural values and mitigation and rehabilitation whenever and wherever possible.

Multiple Use Class L (Limited Use): CDCA Plan designation for an area managed for generally low-intensity, carefully controlled multiple use of resources while ensuring that sensitive values are not significantly diminished.

Multiple Use Class M (Moderate Use): CDCA Plan designation for an area that allows for "a controlled balance" between low- and high-intensity uses while providing for activities such as mining, livestock grazing, recreation, and energy and utility development.

MW: Megawatt

MWD: Metropolitan Water District

NAAQS: National ambient air quality standards

National Environmental Policy Act (NEPA): 1969 federal legislation which encourages restoration and maintenance of environmental quality to the overall welfare of living things.

National Register of Historic Places: A list of significant historic and prehistoric sites and districts which provides procedural protection of these properties.

NEPA: National Environmental Policy Act

NHPA: National Historic Preservation Act

NMHC: Non-methane hydrocarbons

NO: Nitric oxide

NOP: Notice of Preparation

NORA: Notice of a Realty Action

Notice of Preparation (NOP): A brief notice sent by the public agency with principal responsibility for carrying out or approving a project to notify other agencies that an EIR is being prepared.

NO_2: Nitrogen dioxide

NOx: Nitrogen oxides

NPS: National Park Service

OPR: Office of Planning and Research (State of California)

OSHA: Occupational Safety and Health Act

O_3: Ozone

Ozone (O_3): An end product of complex reactions between reactive organic gases (or non-methane hydrocarbons) and nitrogen oxides (NOx) in the presence of intense ultraviolet radiation.

Packer truck: A vehicle used for trash collection which hydraulically compacts the refuse as it is picked up.

Paleozoic era: Geologic time span from 600 to 230 million years ago.

PCBs: Polychlorinated biphenyls

Permeability: The capacity of porous rock, sediment, or soil for transmitting a fluid.

Permit to Operate: Written permit pursuant to Rule 203, Regulation II, of the SCAQMD which must be obtained from the Air Pollution Control District before the article, machine, or contrivance subject to an Authority to Construct is put into operation.

pH: Measure of acidity; the logarithm to the base 10 of the reciprocal of the H+ concentration ([H+]), i.e., the negative logarithm of the [H+].

Photolineaments: Faults observable from aerial photographs.

Pleistocene epoch: Geologic time within the Quaternary period corresponding to approximately 600,000 years ago.

Pliocene epoch: Geologic time within the Tertiary period corresponding to approximately 10 million years ago.

PM10: 10-micron particulate matter

ppm: Parts per million

Precambrian era: Geologic time span 4.5 to 2 billion years ago.

PSD: Prevention of Significant Deterioration

PUC: Public Utilities Commission

Quaternary period: Geologic time span comprising both the Pleistocene and Holocene epochs (600,000 years ago to the present).

Rare species: A species which, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.

RC district: Resource Conservation district

RCRA: Resource Conservation and Recovery Act

Regional Water Quality Control Board (RWQCB): Agency which administers the requirements of the California Administrative Code, Title 23, Division 3, Chapter 15 (Section 2595,g,7) to ensure the highest possible water quality consistent with all demands.

Responsible agency: The organization that has the legal duty to ensure that developers comply with the appropriate rules and regulations.

Right-of-way: The right to pass over property owned by another. The strip of land over which facilities such as roadways, railroads, or power lines are built.

ROD: Record of Decision

ROG: Reactive organic gases

RTCF: Return-to-custody facility

RWQCB: Regional Water Quality Control Board

SANDER: San Diego Energy Recovery Project

SBM: San Bernardino meridian

SCAB: South Coast Air Basin.

SCAG: Southern California Association of Governments

SCAQMD: South Coast Air Quality Management District

SCE: Southern California Edison

SCGC: Southern California Gas Company

Section 1603 Streambed Alteration Agreement: California Department of Fish and Game policy which regulates alteration to streambeds in order to protect fish and wildlife resources.

Section 404 permit: Provision of the Clean Water Act which regulates the amount of fill material that can be placed within defined navigable waterways or wetlands in the United States, especially if federally listed species are involved; issued by the U.S. Army Corps of Engineers.

Section 7 consultation: A requirement of the federal Endangered Species Act which requires formal consultation with the U.S. Fish and Wildlife Service if an action or project may result in impacts to an endangered species.

SEDAB: Southeast Desert Air Basin

Seismicity: The likelihood of an area being subject to earthquakes.

Sensitive species: Generic term for any plant or animal species which is recognized by the government or by any conservation group as being depleted, rare, threatened, or endangered.

Sewage: Wastewater carried by community sewer systems. As defined in Section 13005 of the California Water Code, "any and all waste substance, liquid or solid, associated with human habitation, or which contains or may be contaminated with human or animal body wastes."

Significant environmental impact: As defined by CEQA, Chapter 3, Article 1, Section 15002 (g), "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project."

Silt: Mud or fine earth suspended in water.

Source reduction: In this context, measures to reduce the amount or types of municipal solid waste generated.

South Coast Air Quality Management District (SCAQMD): The air quality regulatory agency for the entire South Coast Air Basin.

SO_2: Sulfur dioxide

SOx: Sulfur oxides

SP: Specific plan

Specific plan area: The extent of a detailed land use plan which is intended to implement the Comprehensive General Plan in the designated area. The specific plan incorporates and establishes land use policies and standards for activities and facilities under California Government Code Section 65450 et seq. and the County General Plan.

SWRCB: State Water Resources Control Board

Tertiary period: Geologic time span comprising the Paleocene, Eocene, Oligocene, Miocene, and Pliocene epochs (65 to 10 million years ago).

Threatened species: Species which, although not presently threatened with extinction, is likely to become endangered in the foreseeable future in the absence of special protection and management efforts.

Tipper: A stationary platform which elevates a trailer so that its refuse is discharged from the rear of the trailer.

TOC: Total organic carbon

Total dissolved solids (TDS): The dry residue from the dissolved matter in a water sample that remains after the sample has evaporated. The TDS serve as an indicator of the chemical quality of waters.

TOX: Total organic halides

tpd: Tons per day

tpy: Tons per year

TSP: Total suspended particulates

USACE: United States Army Corps of Engineers

USFWS: United States Fish and Wildlife Service

U.S.G.S.: United States Geological Survey

VEBA: Volunteer Employee Benefit Association

Vector: A carrier capable of transmitting disease-causing organisms.

Vehicle delay: Cumulative amount of time vehicles are delayed at a railroad crossing. This delay is a function of the length of time the crossing is blocked by a train and of the arrival and departure rate per minute for each vehicle stopped at the crossing. Thus, if 60 vehicles are delayed for 1 minute, the vehicle delay for the crossing is said to be 60 minutes.

VHD: Vehicle hour of delay

Visual Resource Management (VRM) System: BLM's method of assessing visual resources by defining landscape character and scenic quality.

VOC: Volatile organic compound

Volatile organic compound (VOC): Any organic compound having a vapor pressure greater than 3.0 pounds per square inch as determined by the methods of the American Society of Testing and Materials.

VRM System: Visual Resource Management System

Watershed: A region bounded by a narrow tract of high ground which divides the flow of surface waters. A region that contributes water to a particular stream channel or system of channels.

Water table: The upper water level of a body of groundwater.

Waste discharge requirements: Regulation described in Title 23, Division 3, Chapter 15, of the California Code of Regulations which governs discharge of wastes to land in order to preserve the quality of the state's surface and groundwaters.

Waste inspection facility: A place located in either the Phase I or II container handling yard used to inspect and sort loads of waste generated locally (which are not processed through transfer stations) to remove hazardous materials.

Waste stream: The total sum of waste materials present from origin to disposal.

Wilderness Study Area (WSA): Parcel of public land that has been found to possess the basic wilderness characteristics identified by Congress in the Wilderness Act of 1964; namely, naturalness, outstanding opportunities for solitude or for primitive or unconfined types of recreation, size of at least 5,000 acres, and appearance of having been affected primarily by forces of nature.

Working face: Portion of the landfill where solid wastes are presently being discharged.

WSA: Wilderness Study Area

XI. Index

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